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Biden and the Democrats' bench

Macron's double trouble

The West's employment miracle

War at the Oscars

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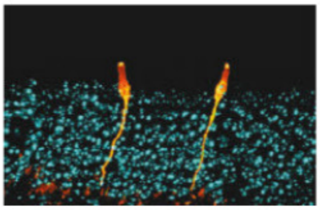

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The world this week Politics

The National People's Congress, **China's** rubber-stamp parliament, opened its annual session. The outgoing prime minister, Li Keqiang, kicked things off by announcing an economic growth target of "around 5%" in 2023, lower than many external forecasts. Xi Jinping blamed Western countries led by America for trying to suppress China. The congress is expected to approve a set of reforms that will give Mr Xi more direct control over government bodies. It will also confirm him for a norm-busting third term as president.

On the wrong track

China's foreign minister, Qin Gang, warned America that its hostile attitude was in danger of souring relations between the two countries, comparing the situation to a train heading towards derailment. China is also "seriously concerned" that the president of **Taiwan**, Tsai Ing-wen, is going to meet the speaker of America's House of Representatives, Kevin McCarthy, in the United States.

Japan's space agency commanded its new **H3 rocket** to self-destruct after its second engine failed to ignite after lift-off. It is a big setback for Japan's rocket programme, which hopes to compete in the growing business of launching commercial and government satellites. The rocket was carrying a satellite that could, among other things, monitor North Korean missile tests.

A suicide-bomber killed ten police officers in **Pakistan's** Balochistan province, the latest in a series of attacks on the country's security forces.

Al-Shabab, a jihadist group in **Somalia** linked to al-Qaeda, recaptured a base that it had lost in the south, a sign that the biggest government offensive against the group in years may be stalling.

Nigeria postponed elections to choose governors in 28 of its 36 states to March 18th in order to configure voting machines after a chaotic presidential election last month.

After a visit to Tehran, Rafael Grossi, the head of the International Atomic Energy Agency, the UN's nuclear watchdog, said that **Iran** had agreed to the reinstallation of cameras and other monitoring equipment at its nuclear sites. He later clarified that the terms of these concessions would have to be worked out in future negotiations with the regime.

Israeli forces killed six **Palestinians** in a raid on Jenin refugee camp in the West Bank. Binyamin Netanyahu, Israel's prime minister, said that one of the dead had been responsible for killing two Israeli settlers in February, which had prompted hundreds of settlers to attack a Palestinian town. Two days after the raid, Israeli security forces killed three Palestinians near Jenin who had opened fire on them while they were trying to make an arrest.

Canada's prime minister, Justin Trudeau, said he would appoint an independent special rapporteur to investigate claims that China had attempted to influence the federal elections in 2019 and 2021. Mr Trudeau has been under pressure to take more seriously reports that China had tried to help his Liberal Party. He contends that the interference did not affect the election results.

Ecuador's National Assembly approved a report by a legislative commission that recommends the impeachment of the country's president, Guillermo Lasso. The vote suggests that the legislature will try to impeach him, but the Constitutional Court has the power to quash that. The report alleges that Mr Lasso failed to stop bribery at public companies.

Armed men kidnapped four Americans and killed two of them in the **Mexican** city of Matamoros, just across the border from Texas. A Mexican woman was also killed. American officials believe that the Gulf Cartel, a gang based in Matamoros, is responsible for the killings. It is not clear what the motive was.

Cities across **Ukraine** were struck by a wave of Russian missiles targeting power infrastructure but which also hit residential buildings. The missiles fell on Kyiv, the capital, Odessa, Kharkiv, Dnipro and other areas. Meanwhile, fierce fighting continued for control of Bakhmut. Volodymyr Zelensky said that the battle for the town and the Donbas region was Ukraine's first priority.

Murky waters

Germany's defence minister warned against jumping to conclusions about who sabotaged the **Nord Stream pipelines** that carried gas from Russia. Boris Pistorius was responding to press reports linking the attack last year to Ukrainians, and said there was an equal chance that it could have been a "false-flag operation staged to blame Ukraine".

The liberal Reform Party increased its number of parliamentary seats in **Estonia's** general election, allowing Kaja Kallas to continue as prime minister. She was urged to form a new coalition quickly to head off any notion of uncertainty regarding her country's stalwart support for Ukraine. The Centre Party, favoured by Estonia's Russian-speaking minority, did badly in the election.

Georgia's ruling party withdrew a bill that would have required NGOs and media that receive at least a fifth of their funding from abroad to register as foreign agents. The legislation had sparked huge demonstrations in Tbilisi, the capital. The protesters, some waving EU flags, feared that the bill would be the first stage towards adopting a clampdown on press freedoms similar to Russia's.

In Athens police clashed with demonstrators protesting over a train crash that killed 57 people. Unions claim that the neglect of rail infrastructure in **Greece** contributed to the tragedy, putting pressure on the government just as it is due to call an election.

Unions in **France** held their biggest strike yet to protest against the government's proposal to raise the state retirement age to 64, from 62.

The British government unveiled its umpteenth plan to try to stop the tide of illegal **migrants** crossing the English Channel. If the bill passes, new arrivals will be detained and swiftly removed, some to Rwanda or a safe third country. Asylum claims would then be heard remotely. Migrant charities said the proposals were unworkable and may flout international law. The opposition described the announcement as "groundhog day".

The American Senate voted to overturn a decision by the council of **Washington, DC,** to reduce sentences for some violent crimes in the city. Democrats in the Senate joined Republicans in blocking the measure, which critics say was soft on crime. Homicides are up by a third in Washington this year, though overall violent crime is down.

The world this week Business

Jerome Powell said that the **Federal Reserve** may have to raise interest rates higher than it had anticipated only recently, because new data on inflation, jobs and spending pointed to an overheating economy. The Fed lifted its main rate by a quarter of a percentage point at its last meeting, but investors now reckon it could increase the rate by half a point on March 22nd. Stockmarkets swooned.

Meanwhile, and pouring more cold water on investors' hopes of smaller interest-rate rises, Christine Lagarde said that "inflation is a monster that we need to knock on the head" and that price pressures remain "sticky". The president of the **European Central Bank** said another half-point increase by the ECB on March 16th was "very, very likely".

Arm, a British chip designer owned by SoftBank, will reportedly raise up to $8bn in a blockbuster IPO later this year. In a blow to the London Stock Exchange, and the lobbying efforts of three prime ministers, Arm has decided to list only in New York.

China's government announced sweeping changes to its supervision of the financial sector, and will create a new body to replace the China Banking and Insurance Regulatory Commission. The oversight of financial companies (except for securities) will fall under the control of a new department that will take over some of the functions of the central bank and report to the State Council. The aim is to consolidate the operations of numerous regulators.

Bank of America declared in its annual report that "We are capitalists," a statement that may not be obvious to critics of the bank's ESG (environmental, social, governance) goals. Brian Moynihan, the chief executive, said in the report that he has been asked in Congress whether he is a capitalist (he replied "yes"). He elaborated that the bank wants to use capitalism to benefit its shareholders, but also address the priorities of society, which may not do much to placate the critics of ESG.

Australia's central bank lifted its main interest rate to 3.6%, the tenth consecutive rise. The bank said that the rate would need to rise again, but it dropped language referring to "multiple" increases.

Holding pattern

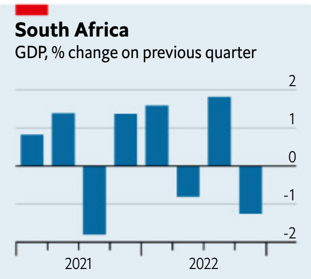
America's Justice Department sued to block **JetBlue's** takeover of **Spirit Airlines**, arguing that their combination would eliminate competition on hundreds of routes and increase air fares. JetBlue won a bidding war for Spirit last year, after Spirit's merger deal with Frontier Airlines fell apart. Both companies said they would fight the lawsuit. The boss of JetBlue said regulators had been determined to stop the deal from the outset.

Altria, one of the world's biggest tobacco companies and owner of the Marlboro brand, swapped its stake in **Juul Labs**, a maker of electronic cigarettes, for intellectual-property rights to some of Juul's technology. Altria paid $12.8bn for the stake four years ago, before Juul was accused by regulators of pushing vaping products to teenagers. The stake is now worth $250m. Expanding its reach into the alternative-cigarette market, Altria has agreed to pay $2.8bn for **NJOY**, which has had an easier time with the regulators.

The company behind **Weight Watchers** announced its acquisition of Sequence, a telehealth platform that provides visits from doctors who can prescribe Ozempic, Wegovy and other weight-loss drugs. The company described weight-management medications as the "biggest innovation in our industry today".

South Africa

GDP, % change on previous quarter



Source: Haver Analytics

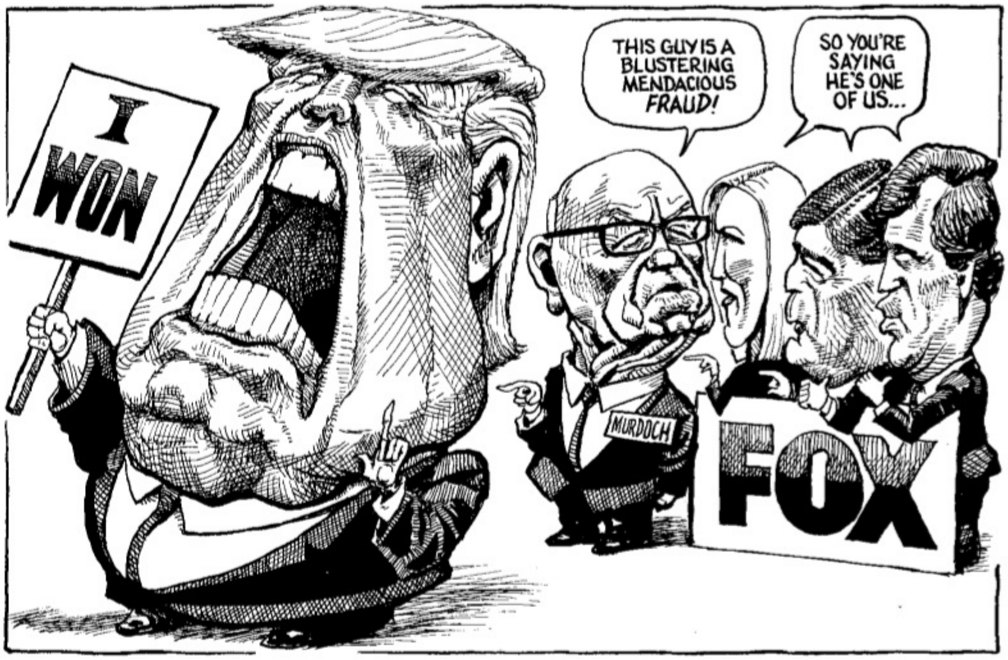
South Africa's GDP shrank by 1.3% in the last three months of 2022 compared with the previous quarter. The country endured a series of rolling blackouts that is estimated to have cost the economy $50m a day.

This week Cyril Ramaphosa, the president, appointed a new electricity tsar to get to grips with the crisis that has beset Eskom, the state provider, which is struggling to meet the demand for power given its old and broken network.

Volkswagen said that it would build a factory in South Carolina to assemble **electric cars** and would open a facility to make batteries in North America. The German carmaker is reportedly suspending plans for a battery plant in eastern Europe as it waits to see if the EU will match subsidies for manufacturing EVs in America's Inflation Reduction Act.

Vegetable stew

A shortage of **fresh produce** in Britain caused unit sales of tomatoes and peppers to drop by around 17% in February, according to NIQ, a market-research firm. But the unit sales of some vegetables did grow, even though adverse weather in exporting regions made them hard to find; cucumbers were up by 32%. And although the volume of fresh produce sold declined, inflation meant that overall grocery sales rose by 11%. So all in all Britain's salad days are far from over.


I WON
THIS GUY IS A BLUSTERING MENDACIOUS FRAUD!
SO YOU'RE SAYING HE'S ONE OF US...
MURDOCH
FOX

How to avoid a third world war

A superpower conflict would shake the world

Europe is witnessing its bloodiest cross-border war since 1945, but Asia risks something even worse: conflict between America and China over Taiwan. Tensions are high, as American forces pivot to a new doctrine known as "distributed lethality" designed to blunt Chinese missile attacks. Last week dozens of Chinese jets breached Taiwan's "air defence identification zone". This week China's foreign minister condemned what he called America's strategy of "all-round containment and suppression, a zero-sum game of life and death".

As America rearms in Asia and tries to galvanise its allies, two questions loom. Is it willing to risk a direct war with another nuclear power to defend Taiwan, something it has not been prepared to do for Ukraine? And by competing with China militarily in Asia, could it provoke the very war it is trying to prevent?

No one can be sure how an invasion of Taiwan might start. China could use "grey-zone" tactics that are coercive, but not quite acts of war, to blockade the self-governing island and sap its economy and morale. Or it could launch pre-emptive missile strikes on American bases in Guam and Japan, clearing the way for an amphibious assault (see Briefing). Since Taiwan could resist an attack on its own only for days or weeks, any conflict could escalate quickly into a superpower confrontation.

Rather than the trenches and human-wave attacks seen in Ukraine, a war over Taiwan could involve a new generation of arms, such as hypersonic missiles and anti-satellite weapons, causing untold destruction and provoking unpredictable retaliation. The economic fallout would be devastating. Taiwan is the world's essential supplier of advanced semiconductors. America, China and Japan, the three largest economies, and among the most interconnected, would deploy sanctions, crippling global trade. America would urge Europe and its other friends to impose an embargo on China.

War is no longer a remote possibility, because an unstated bargain has frayed. Since the 1970s America has been careful neither to encourage Taiwan formally to declare independence nor to promise explicitly to defend it. While not ruling out force, China has said it would favour peaceful reunification. But those positions are changing. President Xi Jinping has told the People's Liberation Army to be ready for an invasion by 2027, says the CIA. President Joe Biden has said that America would defend Taiwan if China were to attack (aides say policy is unchanged). The military balance no longer so clearly favours America as it did in the 1990s. And public opinion has shifted in Taiwan, not least because of how China has snuffed out freedoms in Hong Kong. Only 7% of Taiwanese favour reunification.

Both sides are shoring up their positions and trying to signal their resolve, with destabilising consequences. Some acts generate headlines, as when Nancy Pelosi, then speaker of the House of Representatives, visited Taipei last year; others are almost invisible, such as the mysterious severing of undersea internet cables to remote Taiwanese islands. Diplomacy has stalled. Top American and Chinese defence officials have not spoken since November. During the recent spy-balloon incident, a "hotline" failed when China did not pick up. Rhetoric aimed at domestic audiences has grown more martial, whether on the American campaign trail or from China's top leaders (see China section). What one side sees as a defensive act to protect its red lines, the other sees as an aggressive attempt to thwart its ambitions. Thus both sides are tempted to keep hardening their positions.

It is unclear how far America would go to defend Taiwan. The island is not a domino. China has some territorial designs beyond it, but does not want to invade or directly rule all of Asia. And as our special report explains, it is unclear how many Taiwanese see China as a real threat, or have the stomach for a fight.

The Taiwanese, like the Ukrainians, deserve American help. The island is admirably liberal and democratic, and proof that such values are not alien to Chinese culture. It would be a tragedy if its people had to submit to a dictatorship. If America walked away, the credibility of its security umbrella in Asia would be gravely in doubt. Some Asian countries would accommodate China more; South Korea and Japan might seek nuclear weapons. It would boost China's worldview that the interests of states come before the individual freedoms enshrined in the UN after the second world war.

But the help Taiwan receives should aim to deter a Chinese attack without provoking one. America needs to consider Mr Xi's calculus. A blanket American security guarantee might embolden Taiwan to declare formal independence, a red line for him. The promise of a much larger American military presence on Taiwan could lead China to invade now, before it arrives. A botched invasion, however, would cost Mr Xi and the Communist Party dearly. America needs to calibrate its stance: reassure Mr Xi that his red lines remain intact, but convince him that aggression carries unacceptable risks. The goal should not be to solve the Taiwan question, but to defer it.

Taiwan has avoided provocation. Its president, Tsai Ing-wen, has not declared independence. But it needs to do more to deter its neighbour, by boosting defence spending so that it can survive longer without American help, and by preparing its citizens to resist grey-zone tactics, from disinformation to vote-rigging. For its part, America should try harder to reassure China and to deter it. It should avoid symbolic acts that provoke China without strengthening Taiwan's capacity to defend itself. It should keep modernising its armed forces and rallying its allies (see Asia section). And it should be prepared to break a future blockade, by stockpiling fuel, planning an airlift, providing backup internet links and building an allied consensus on sanctions.

America and today's Chinese regime will never agree about Taiwan. But they do share a common interest in avoiding a third world war. The first 15 years of the American-Soviet cold war featured a terrifying mixture of brinkmanship and near-catastrophic mistakes, until the Cuban missile crisis prompted a revival of diplomacy. This is the terrain the world is now on. Unfortunately, the potential common ground between America and China on Taiwan is shrinking. Somehow, the two rival systems must find a way to live together less dangerously. ■

Life expectancy

The missing quarter of a million

Britain has endured a decade of early deaths, and the pandemic is not the only reason

IN RECENT YEARS Britain has been hit by one health crisis after another. First came the covid-19 pandemic—then backlogs in health and social care that the coronavirus exacerbated, and a long winter of strikes and overwhelmed emergency departments. But in the background, long before the pandemic hit, an even more disturbing story has been unfolding. Britain has endured a grim decade during which perhaps a quarter of a million people died younger than expected (see Britain section).

By our calculations, that is the number of extra deaths Britain has suffered, compared with similar countries such as France and Denmark. The reason is that, in the early 2010s, life expectancy stalled in Britain compared with long-run trends and other countries. This slowdown in life expectancy struck all age groups, not just the elderly. And it disproportionately affected the poor. If you travel just 10km (six miles) from the poshest part of Kensington in London to New Cross Gate, life expectancy for men falls by a staggering 18 years, from 92 to 74. The burden these deaths place on the living is not just weighed in grief. When more people are dying and life expectancy is stagnating, a greater number of people are also living in ill health.

Life expectancy in Britain, as in almost all other rich countries, had been rising for nearly two centuries. But something went wrong in the early 2010s. Life expectancy at birth today, at 81, is just eight weeks longer than it was in 2011. In a best-case scenario, in which the pace of improvement between 1980 and 2011 had been sustained, life expectancy today would have been over 83. By *The Economist*'s calculations, that is no minor difference: it implies that between 2012 and 2022 approximately 700,000 Britons died sooner than they might have.

Two features make this figure even more worrying. Death comes mostly when people are old. But the slowdown in life expectancy has occurred across all age groups. Mortality rates have stalled for infants, and risen among young adults and the middle-aged. Death rates for 30- to 49-year-olds have steadily increased in Britain since around 2012, in sharp contrast with neighbouring countries.

Although the deaths have been spread across generations, they have not been spread across the income spectrum. Life expectancy has fallen among the poorest in society but risen for the richest. A poor English girl could on average expect to live 6.8 years less than a rich girl in 2011, but 7.7 less in 2017. For boys, the gap increased from 9.1 to 9.5 years over the same period.

The combined effect of the pandemic and global demographic trends can explain only some of Britain's missing multitude. Though other rich countries have also experienced slowdowns, Britain has done the worst out of a cohort of its European peers. After stripping out the effects attributable to covid and the broad European slowdown from the toll of 700,000, you are still left with those 250,000 unexplained deaths.

Working out what has gone wrong is not easy. In America, where life expectancy has fallen even more sharply in recent years, "deaths of despair" from drugs, alcohol and suicide have done the most harm. The same is true for Scotland, where drug deaths have more than doubled in a decade; Dundee is now the drug-death capital of Europe. Yet although a similar problem may be brewing in England and Wales, the rate of drug deaths is nearly four times higher in Scotland.

The recent struggles of the National Health Service (NHS) have played their part. Hospital waits of record lengths and a crisis in primary care jeopardise timely treatment. But delays in medical care cannot explain all the extra deaths, especially before the pandemic. Besides, the greatest improvements in life expectancy come not from treatment but from better diagnosis and prevention, and wider prosperity. This is where Britain appears to have fallen short. It could do much better in all three.

First, diagnosis. Poorer Britons are 20% more likely to be diagnosed with cancer at a later stage, when the disease is more complex and expensive to treat. Having more NHS diagnostic centres would help, as well as cutting the pandemic-related backlog. Prescribing more statins for those at risk of heart attack or stroke would be good, too. Both treatments are cheap and cost-effective, and are recommended. But with around one in 11 NHS posts vacant, it will be tricky to find enough radiologists and general practitioners to make a difference.

Next, prevention. Individuals bear responsibility for their own decisions but public-health interventions, from vaccines to anti-smoking and weight-loss programmes, can improve things. They also provide good value for money. One study found that it cost nearly four times as much to gain an extra year of good health via clinical interventions than through public-health programmes. Yet funding for the public-health grant, which is allocated to local authorities by central government and amounts to a mere 2% of the NHS budget, has been cut in real terms in recent years.

Ultimately the greatest improvements will come from raising the living standards of the poor. Their lower life expectancy has many causes, from less money to spend on home insulation or nutritious food, to the stress of financial insecurity. One useful long-term thing the government can do is help improve the country's dreadful record on productivity by liberalising planning and devolving fiscal powers to local authorities.

Life after life

The government should also recognise the role that deprivation plays in health. Reweighting funding formulas to benefit general practitioners in the poorest areas would be a good idea. They care for 10% more patients than practices in the richest areas, but receive 7% less cash. And as Jeremy Hunt, the chancellor of the exchequer, prepares his budget for March 15th, he should recognise how spending cuts show up in other areas. The data show that life expectancy was worst affected in the places with the largest relative declines in housing services and adult social-care spending between 2009 and 2019.

In its covid response, Britain went to extraordinary lengths to prevent its citizens from suffering an early death. The pandemic may be over, but that job is nowhere near complete. ■

The world economy

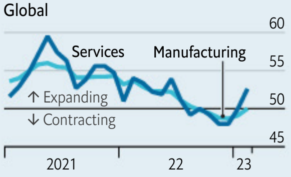
Too fast to land

A stubbornly strong economy is frustrating central banks in their fight against inflation

You might have expected the fastest tightening of global monetary policy in 40 years to deal a heavy blow to the world economy. Yet in 2023 it seems to be shrugging off the effects of higher interest rates. Not only is inflation stubbornly high, but economic activity also appears to have quickened. Faster growth may sound good, but it is a headache for policymakers, who are trying to bring about a managed slowdown. And it could mean that a recession, when it eventually strikes, is more painful.

At the end of last year, according to business surveys, manufacturing and services output were both shrinking around the world. Today manufacturing output is flat and services are rebounding. American consumers are spending freely. Both wages and prices continue to grow fast, even in places where they were long stagnant. Japan looks set for a round of bumper wage rises in the spring. In the euro zone the monthly rate of "core" inflation, which excludes food and energy prices, broke records in February. Labour markets are extraordinarily tight. As we report this week, in half of the members of the OECD, a group of mostly rich countries, employment rates are currently at record highs (see Finance & economics section).

Purchasing managers' index
Global



From equities to credit, financial markets are priced for global economic growth that is above trend. Not so long ago, investors were debating whether the world economy would face a "hard landing" involving a recession, or a "soft landing", in which inflation was conquered without any downturn. Today they are asking whether the world economy is landing at all.

There are several reasons for the apparent acceleration. The mini-boom that took hold in the markets late in 2022 stimulated animal spirits. China's reopening from zero-covid has led to a swift economic recovery which has caused order books in emerging markets to fill up. Falling energy prices in Europe have loosened the screws on its economy. But above all else, consumers and firms in most big economies are in strikingly good financial health. Many households are still flush with savings built up during the covid-19 pandemic; firms managed to lock in low interest rates for long stretches and have yet to suffer much from higher borrowing costs. Only in the most rate-sensitive sectors of the global economy, such as property, is the impact of higher rates clearly visible. In America the economy is so strong that even housing may be recovering slightly.

The acceleration means that recession is not imminent. But it also means that central banks will have to raise interest rates further if they are to succeed in returning inflation to their 2% targets. On March 7th Jerome Powell, the chairman of the Federal Reserve, hinted as much, causing stockmarkets to fall. Policymakers now face two difficult judgments.

The first is the extent to which monetary tightening to date has yet to have its full effect. Economists often talk up the "long and variable lags" with which interest rates work, but research suggests policy may be working faster today. If the effects of last year's tightening are already exhausted, much more may be needed. A second judgment is over the persistence of the factors that seem to have immunised much of the economy against rate rises. Eventually, consumers will run out of spare cash and firms will feel the pinch from higher borrowing costs. In Sweden, where interest-rate rises rapidly pass through to households, the economy is suffering.

One thing is clear: the ideal path, where inflation falls without growth faltering much, looks narrower than it did even a month ago. Instead, central banks are increasingly likely to have to choose between tolerating higher inflation or slamming on the brakes for a second year running. ■

Emmanuel Macron

Trouble on two fronts

Strikes at home and war in Ukraine test the French president

Emmanuel Macron swept to power in 2017 on the back of a twin promise: to shake up France, and embolden Europe to act as a more muscular power. The French president's first term had its ups and downs, but France today is broadly a more vigorous place, more enterprising, job-creating and welcoming to investors. The European Union, too, has moved in Mr Macron's direction. Russia's savage war on Ukraine has shown that a fractious rules-based club of 27 members can hold together, think geopolitically and export weaponry into a war zone.

Now, though, Mr Macron faces trouble on both fronts. His authority is being tested in the National Assembly and on the streets at home, and his leadership challenged abroad (see International section). How he responds will determine whether the leader of the EU's second-biggest economy and foremost military power can keep modernising France and shaping Europe.

Mr Macron's domestic woes concern his plan to raise the minimum pension age from 62 to 64. The French live almost a decade longer than in 1980, and spend longer in their deckchairs than their neighbours. Without reform, the pension system faces an annual deficit of €14bn ($15bn) by 2030. But Mr Macron has failed to persuade the French that his fix is the right one. Last year voters denied him a majority in parliament. Now unions want to defeat his project on the streets (see Europe section).

This pension reform is necessary for France. Mr Macron needs to do a better job of explaining why it is not just an accounting tool, but part of a wider effort to get the French to work more, and more of the French to work. The unemployment rate stood at 7.2% in the most recent quarter, roughly twice the rate in America and Britain. The last time it was as low as 5% was in the 1970s. His government also needs to take on the opposition parties' claim to have a better solution that entails more taxes on companies and the rich. That is the last thing France needs. Despite Mr Macron's tax cuts, France is still the most highly taxed economy in the euro zone. Hence, even if painful strikes drag on, the president cannot afford to back down.

If Mr Macron cannot secure parliamentary support before the deadline of March 26th, he could still force the reform through. But that would be best avoided. Left-wing opposition parties have repeatedly sought to create havoc and derail parliamentary procedure. They would seize any chance to declare the reform illegitimate. The centre-right opposition has behaved dishonourably too, reluctant to back a change that, in 1995 and 2010, it also proposed. It has no excuse for not supporting the reform.

Abroad, Russia's war on Ukraine has in many ways vindicated Mr Macron's call for a stronger EU, squeezed between America and China, which can assert itself with hard force, not just trade and rules. Yet Mr Macron is struggling to persuade his allies that his policies, notably on European security, are the best way to achieve this. He is not leading the debate over Ukraine. And in Africa he is losing influence to China, Russia and Turkey.

If Mr Macron is to revive his EU leadership, he would do well to spend less time musing out loud about the future contours of a post-war settlement, and more crafting closer ties to countries, including Poland and the Baltics, which still suspect him of wanting to press Ukraine prematurely into talks. Having at first focused on its diplomacy with Russia, France has swung firmly behind Ukraine. Its position now is close to America's. Yet Mr Macron is too often tempted to voice ideas that America may share, but keeps to itself. France could also do more to send heavy weaponry to Kyiv, and fast.

A more robust Europe, faced with the threat from autocratic powers and the risk of excessive reliance on America, needs a strong France. Mr Macron is now one of Europe's most experienced leaders. He brims with ideas, many of them good, and commands a fine diplomatic machine. This is a critical moment. He cannot afford to get it wrong. ■

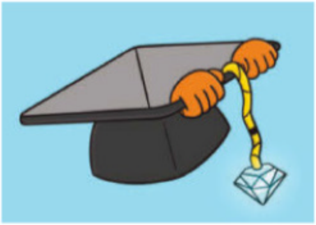
American universities

Testing fail

The right way to pursue fairness is to ditch legacy admissions, not standardised exams

The best American universities wish to be ruthlessly discriminating on academic merit—and beacons for diversity on everything else. Trying to accomplish both at once can prompt mistakes. Lately Columbia University, an Ivy League member in New York, has been making a lot of them. Last year it admitted to submitting incorrect data to a college-rankings outfit in a bid to seem more exclusive than it really is. And on March 1st, in a bid to seem more inclusive than it is, Columbia said it would drop the requirement for applicants to submit standardised exam scores.

Campaigners claim that exams favour the privileged. Evidence for this is thin. Maths problems involve neutral things like numbers and algebra; reading-comprehension tests are rarely about silverware or yachting. The bias, however, is said to be latent. Because scores are correlated with race and parental income, the exams must therefore be contaminated with racism and classism.



This confuses disparity with discrimination. Tests correctly measure educational inequality, which begins before kindergarten and grows as a result of bad policy. Just as smashing thermometers does not prevent climate change, so abandoning the measurement of educational inequality will not magic it away.

In fact, for meritocrats to abandon exams is self-defeating. Scores may be correlated with privilege, but they are probably the hardest part of an admissions application to warp with money. Children of the rich can get ample help in completing their coursework (which may receive inflated grades), hire professional writers to "edit" their essays and even spend lavishly on consultants who will help craft a delectable smorgasbord of extra-curricular activities. Yet research shows that intensive tutoring has a marginal effect on test scores. That is why, in the Varsity Blues scandal of 2019, very rich parents paid to have others sit their children's exams.

Worse, supposedly progressive universities like Columbia operate affirmative-action schemes for deep-pocketed dullards in the form of "legacy" admissions that shower advantages on the relatives of alumni. One study found that undergraduates at Columbia are more than 100 times more likely to belong to the top 0.1% of families by income than to the poorest 20%. The best way to promote fairness would be to eliminate such a regressive pathway to admission.

In the 1920s Harvard moved to a "holistic" admissions system because its president thought it had too many Jewish students (who excelled on the standardised exam adopted in 1905). A century later, Harvard is being sued over a holistic admissions system that limits the number of Asian-American students, who also do well on tests. Based on that case, the Supreme Court is expected to rule that race-based affirmative action is unconstitutional. A cynical observer might conclude that universities are jettisoning quantitative measures, the lawsuit's key evidence, to make discrimination harder to detect.

Fixing educational inequality requires more data, not less. Susan Dynarski, an economist at Harvard, makes the case that free, universal testing helps unearth promising young talent from rough backgrounds. Timely reminders about financial aid also help. For decades, elite universities have sought skin-deep diversity to paper over abysmal socioeconomic diversity, a failing that is exacerbated by legacy admissions. If the Supreme Court rules that stratagem out, universities should not devote their energies to maintaining an undesirable status quo, but to crafting something better: a true meritocracy shorn of an unjustifiable, hereditary mediocracy. ■

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[1] OECD. (2019). ***Accelerating Climate Action.*** OECD iLibrary.

Letters

The integrity of research

You criticised publishers for failing to allocate more resources to rooting out problematic medical-research papers ("Doctored data", February 25th). Springer Nature has for years committed significant staffing and investment in technology to tackle issues relating to research integrity. We have a dedicated team of employees with relevant academic expertise focused on investigating papers of concern and preventing problematic submissions from entering the literature.

We continue to invest heavily to develop new artificial intelligence and other tech-based tools and have numerous checks in place to identify and prevent deliberate manipulation, as well as developing and delivering training for all our editors. Springer Nature is also working to share our knowledge and support the wider publishing community in addressing this through our contributions to the STM Integrity Hub, a holistic centre for all publishers.

CHRIS GRAF
Research integrity director
Springer Nature
London

Fertility in the OECD

Your article looking at why there are so few babies in southern Europe did not provide evidence in support of the claim that in the OECD, a club mostly of rich countries, there is now a positive correlation between GDP per head and fertility ("Baby gap", February 18th). There is no correlation whatsoever between GDP per head and fertility within the OECD (by the way the data for Ireland are muddied by the fact that Ireland has been for a while a tax haven for tech firms like Google, Facebook and Apple).

Actually, within each single OECD country there is an inverse correlation between income and fertility (see, for instance, data from the American Census Bureau). A clear-cut negative correlation is also visible when all countries (beyond the OECD club) are included in the analysis. Do not take my word for it, check the data published by the United Nations Population Division, United Nations Statistical Division, Eurostat, World Bank and so on.

There are many factors that influence fertility rates. Some of them were mentioned in the article. Others were not. For example, the article did not take into proper consideration the importance of the ethnic, religious and cultural make-up of the population, also as a function of immigration.

ALDO BADIANI
Professor of pharmacology
Sapienza University of Rome

Mind the peace

Soldiers on the front lines, in Ukraine or elsewhere, have pressing mental-health needs, but their longer-term reintegration into peaceful communities requires the healing of trauma and stress combined with livelihood-skills training ("The enemy within", February 11th). New research shows that strengthening mental health and livelihood skills at the same time, rather than separately, can reduce depression among traumatised people by 64% and anxiety by 60%. It can also increase forgiveness by 71%. Soldiers need both peace of mind and ways to live productively once the guns are silenced, as do the even greater number of civilians in war-torn societies.

SIMON GIMSON
Vice-president
Interpeace
Geneva

European energy in America

It is indeed puzzling that America's Inflation Reduction Act has caused such a fuss in Europe, especially pertaining to renewable energy (Charlemagne, February 11th). The fine print of the legislation will probably have little to no impact on the sourcing strategies of wind-turbine manufacturers and will not affect the existing solar-panel industry in the European Union.

However, it will boost all the big players in the American market, most of which, ironically, are European companies. In wind turbines, only GE is American. The remainder of the American market is dominated by Vestas (Danish), SGRE (German-Spanish) and Nordex (German). The R&D departments of all these companies will remain in the EU.

On the developer, owner and operator side of the business, including transmission networks, European companies are equally if not more dominant. EDF (France), Enel (Italy), EDPR (Portugal), RWE (Germany) and Orsted (Denmark) are some of the largest in America, and this is an inexhaustive list. Iberdrola (Spain) has a mind-boggling number of American subsidiaries ranging from retail energy, transmission, charging networks and power plants. The only thing the EU should do with regards to the IRA is buy shares in Europe's various energy champions.

NICOLAS BOURBONNIERE
Montreal

Against and for the car

Efforts to tame the use of cars stretch back longer than indicated in your report ("Driven away", February 18th). In 1959 the plan for a partly elevated Embarcadero freeway in San Francisco, designed to connect the Bay and Golden Gate bridges, was cancelled by the board of supervisors following unprecedented opposition from affected residents. In London three concentric ringways, including a hugely destructive inner one called the motorway box, were cancelled in 1973 by an incoming Labour-controlled council. Homes Before Roads, an upstart political party that contested the London election in 1970, helped to damn the huge roads. The OECD held a transport ministers' conference in 1975 themed "Better Towns with Less Traffic". And town planners have been arguing against cars for longer than 20 years. Alfred Wood, architect planner for Norwich, persuaded his English city council to pedestrianise London Street as long ago as 1967.

The convenience of cars has certainly transformed cities, but the car did not create suburbs and the tide against their destructiveness began to turn decades ago.

TERENCE BENDIXSON
Former president
Living Streets
London

Walkable cities are great for residents and the laptop class, but banning cars makes those cities less affordable for the working class. If you prohibit cars, how is a tradesman with a 40-pound toolkit going to get to work? Turning parking spots into bike lanes is great for cyclists, but where are the trucks supposed to park when delivering goods to those cosy neighbourhood cafés?

A city dweller can work from a coffee shop with a laptop, but the coffee neither delivers, brews, nor serves itself. The Uber passenger may relish not needing a car, but the driver doesn't have that luxury. Congestion pricing keeps traffic down in exclusive neighbourhoods, but it is in effect a tax on people driving into them. The concept of the 15-minute city, where you can walk or cycle to everything you need within 15 minutes, doesn't seem to give much thought to the help.

GUS DOWNES
Los Angeles

In the 1980s owning a car for a young man was a universally acknowledged requirement by both sexes in the Darwinian struggle to find a mate. Margaret Thatcher once said that a man who has gone beyond 26 and remains without a car is a bit of "a failure".

PAUL D'EATH
Toronto

Letters are welcome and should be addressed to the Editor at
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Storm warning

GUAM, HONOLULU, OKINAWA AND TAIPEI

China and America are preparing for a devastating war

THEIR FACES smeared in green and black, some with Stinger anti-aircraft missiles on their packs, the men of "Darkside"—the 3rd battalion of America's 4th marine regiment—boarded a pair of Sea Stallion helicopters and clattered away into the nearby jungle. Their commanders followed in more choppers carrying ultra-light vehicles and communications gear. Anything superfluous was left behind. No big screens for video links of the sort used in Iraq and Afghanistan: to avoid detection, the marines must make sure their communications blend into the background just as surely as their camouflage blends into the tropical greenery. The goal of the exercise: to disperse around an unnamed island, link up with friendly "green" allies and repel an amphibious invasion by "red" forces.

Ignore the polite abstractions. The marines are training for a war with China, probably precipitated by an invasion of Taiwan. Their base in Okinawa, at the southern end of the Japanese archipelago, is just 600km (370 miles) from Taiwan. The two islands are part of what American military planners call the "first island chain": a series of archipelagoes and islands, big and small, that stretches from Japan to Malaysia, impeding naval passage from China to the Pacific. Whether by harrying Chinese ships from a distance or—much less likely—by deploying to Taiwan to help repel a Chinese landing, the marines will be early participants in any conflict.

The hardest part, says Lieutenant-Colonel Jason Copeland, Darkside's commanding officer, would be dealing with "an adversary that's coming at you in mass". As China's military power grows, predicting how a war over Taiwan might unfold, and thus improving the odds of fending China off without unleashing a nuclear calamity, is getting ever harder. The only certainty is that, even if all nuclear weapons remained in their silos, such a conflict would have horrific consequences, not just for the 23m people of Taiwan, but for the world.

China's Communist leaders have claimed Taiwan since Nationalist forces fled to it after losing a civil war in 1949. America has long pledged to help the island defend itself. But in recent years, on both sides, rhetoric and preparations have grown more fevered. China's forces often practise island landings. Its warships and fighter jets routinely cross the "median line" (in effect Taiwan's maritime boundary) and harass military ships and planes of America and its allies. After Nancy Pelosi, at the time the Speaker of America's House of Representatives, visited Taiwan last year, China fired missiles towards it.

Dire strait

America, meanwhile, is sending more military trainers to Taiwan. The Taiwanese government recently increased mandatory military service from four months to a year. Prominent congressmen have urged President Joe Biden to learn from Russia's attack on Ukraine and give Taiwan all the weapons it may need before an invasion, not after one has started. Adding to the sense of impending crisis are America's efforts to throttle China's tech industry and Mr Xi's growing friendliness with Russia.

American military commanders and intelligence chiefs say Mr Xi has ordered the People's Liberation Army (PLA) to develop the capacity to invade Taiwan by ▶▶

2027. Some think conflict is closer. "My gut tells me we will fight in 2025," General Michael Minihan, head of America's air mobility command, recently warned subordinates. Both sides fear that time is running out: America worries that China's armed forces may soon become too strong to deter, while China frets that the prospect of peaceful reunification is evaporating.

"War with China is not inevitable, and it's not imminent," declares Admiral John Aquilino, commander of America's Indo-Pacific Command, who would oversee any fight with China. Speaking in his headquarters overlooking Pearl Harbour, scene of Japan's pre-emptive strike in 1941, he says his first mission is "to do everything in my power to prevent a conflict". Nonetheless, he adds, "if deterrence fails, you must be prepared to fight and win." As Russia's invasion of Ukraine shows, he warns, "There is no such thing as a short war."

The first question for America's strategists is how much warning they would get of an impending invasion. The PLA, with an estimated 2m active personnel, versus Taiwan's 163,000, would need extensive preparations to conduct what would be the biggest amphibious assault since the D-Day landings in 1944. It would have to cancel leave, gather landing ships, stockpile munitions, set up mobile command posts and much more.

But in a war of choice, with Mr Xi able to pick his timing, many of these moves could be disguised as military exercises. American defence officials say they might see unambiguous signs of imminent war, such as stockpiling of blood supplies, only a fortnight ahead. For smaller operations, to seize islands Taiwan controls close to the mainland, say, there might be only a few hours' warning—if that.

America would want to expose China's preparations early, as it did with Russia's invasion of Ukraine, and rally an international coalition in opposition. That would be easier if Mr Xi embarked on an outright invasion. But China may try to exploit the ambiguities of Taiwan's status: it does not have diplomatic relations with most other countries (see Special report). If Mr Xi cites some "provocation", and begins with actions short of war, such as a blockade, America or its allies might equivocate.

America must also weigh how far its preparations risk precipitating conflict. Send aircraft-carriers to the region as a show of force? Deploy troops to Taiwan? Threaten China's oil supplies through the Strait of Malacca? All might be deemed provocations by China, if not acts of war.

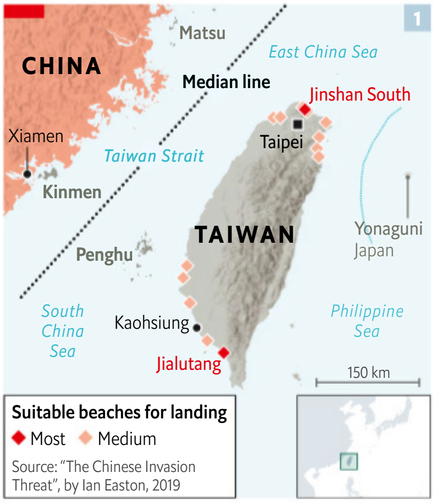
As war approaches, Taiwan will move navy ships from its vulnerable western coast to the east, behind the mountain range that runs along the eastern side of the island. It would seek to hide jet fighters in underground shelters and mobilise its 2.3m reservists. It would also have to control widespread panic, as multitudes attempted to flee and as transport links to the outside world were cut.

America, too, would be dispersing jets from exposed bases. The marines would deploy around maritime choke-points. American submarines would slip under the waves, some mustering close to Taiwan. Some American and Taiwanese military commanders would no doubt press for military strikes against China's gathering invasion force. They would probably be overruled by those seeking a diplomatic solution, or at least not wanting to be blamed for firing the first shot.

China, for its part, would have to take a momentous decision. Should it limit its attack to Taiwan, hoping to create a *fait accompli* as America and its allies dither? Or should it strike America's forces in the region, in a new Pearl Harbour? The first option leaves America free to attack the invasion fleet; the latter all but guarantees its wholehearted entry into the war, and probably Japan's, too, if China attacked American bases there.

An invasion would almost certainly begin with massive missile and rocket strikes on Taiwan. These would quickly destroy much of Taiwan's navy, air force and air defences. Wang Hongguang, a former deputy commander of the PLA region opposite Taiwan, predicted in 2018 that there would be 24 hours of bombardment—first on military and political targets, then on civilian infrastructure such as power plants and fuel depots. He suggested that China would blind Taiwan's satellites, cut its subsea internet cables and use electronic warfare to scramble its command-and-control systems, hobbling co-ordination with American and allied forces.

General Wang said the onslaught would cause enough havoc to open at least a two-day window for invasion. If American forces did not arrive within three days, he blustered, "don't bother to make a trip in vain".



Source: "The Chinese Invasion Threat", by Ian Easton, 2019

China will also do its best to sap Taiwan's will to fight. Its cyber-forces will try to hack local television and radio, and bombard Taiwanese soldiers with text and social-media messages, offering rewards to mutineers and deserters.

China must then confront the formidable challenge of an amphibious assault, one of the most difficult forms of warfare. The beaches of Kinmen, a Taiwanese island just 3km from the mainland, are dotted with relics from an attempted invasion in 1949, when Nationalist forces killed or captured almost the entire advance party of 9,000 Communist troops who landed in small fishing boats. The PLA has come far since then, acquiring advanced weaponry and studying precedents such as D-Day, the American-led landings at Incheon in Korea in 1950 and Britain's recapture of the Falkland Islands from Argentina in 1982.

Walk of strife

Yet the risks are still great. China has not fought a war since invading Vietnam in 1979. Although the Taiwan Strait is only 130km wide at its narrowest, its currents and tides are powerful and erratic. Conditions are usually propitious only in March-May and September-October. Just 14 of Taiwan's beaches are suitable for landings and they are heavily fortified, especially the ones close to Taipei, where Chinese forces would probably prefer to start an invasion (see map 1). Taiwan has built lots of bunkers and tunnels in the area.

Nor is it certain that the PLA has enough ships to transport an adequate landing force quickly across the strait. It would need 300,000 to 1m troops to be sure of subduing Taiwan. It has six amphibious army brigades stationed nearby, with a combined 20,000 troops, plus a similar number of marines. But China's amphibious landing ships could probably ferry only about 20,000 soldiers across in the first day or two, depending on how much equipment they take. Likewise, the PLA's transport aircraft could probably convey only half of its 20,000 airborne troops in the opening phase. The PLA recently practised using ferries and other civilian ships, which could bring across many more units but, for that to work well, China would need to capture a still-usable port.

The war in Ukraine has raised fresh doubts, too, especially about China's ground forces. Its combined-arms battalions, including its amphibious ones, are modelled on Russia's battalion tactical groups, which have struggled in Ukraine. Even if China succeeded in swiftly decapitating Taiwan's leadership, it might still face protracted fighting against forces replicating the Ukrainians' use of portable missile-launchers and drones.

Taiwan's strategy, meanwhile, is to thwart China's initial landing or prevent it

No easy way past

from bringing enough troops. Taiwanese forces would block ports and beaches with sea mines, submerged ships and other obstacles. Backed by surviving aircraft and naval vessels, they would strike China's approaching force with missiles and pound disembarking Chinese troops with artillery and rockets. Some PLA texts suggest that Taiwan has underwater pipelines off its beaches that could release flammable liquid. Some of its outlying islands are protected by remote-controlled guns.

If the PLA broke out of its beachheads, it would face a slog through arduous terrain to reach Taipei and other urban centres. Then both sides would face a challenge for which neither is fully prepared: urban warfare. Taiwan is reluctant to fight in its cities, fearing high civilian casualties. The PLA does train for urban warfare, but had long banked on a quick victory if it reached Taipei. Since the war in Ukraine began, however, both sides have been practising fighting in built-up areas more.

Even if a Chinese invasion got bogged down, though, time would not be on Taiwan's side. "We can fend them off for one or two weeks but no longer," says Si-fu Ou of Taiwan's Institute for National Defence and Security Research, a think-tank. Unless Taiwanese forces resist steadfastly, everything else is futile. But, by the same token, Taiwan cannot hope to defend itself in the long run without American help.

As an island, Taiwan is not just harder to invade than Ukraine, but also harder to support. Its ports might be destroyed by China, its own forces or even America's. Attempting to bring reinforcements or supplies to the island as Chinese missiles rain down would be almost as difficult as attempting to invade.

At the very least, America and Taiwan would need help from allies. Japan, which hosts tens of thousands of American troops, has capable forces. The Philippines is weak militarily but close to Taiwan. Australia is closely allied but modestly armed and farther away. Countries in the Pacific could provide rear bases. More distant allies, such as Britain, might send naval vessels. A big uncertainty is how much India would help. A lot would depend on how the crisis unfolds and who is blamed for it.

America's plans to help Taiwan used to hinge on aircraft-carriers. It sent one to the area after China fired missiles near Taiwan in 1995 and again after another salvo in 1996. But China has since invested heavily in "anti-access/area-denial" (A2/AD) weapons, designed to fend off American ships and aircraft. They include the DF-26 missile, which can strike deep into the Pacific (see map 2 on next page), and new hypersonic missiles that are harder to intercept. China's navy is now the world's largest, with a fleet of submarines to attack approaching American ships. Its long-range bombers are also a menace. David Ochmanek of the RAND Corporation, a think-tank that has run classified war-games simulating a Taiwan conflict, argues that old American strategies now "lead to defeat".

American planners' alternative is summed up with three D's: disrupt Chinese operations within the first island chain, defend allies on it and dominate the sea and air beyond. America must overcome daunting problems: the "tyranny of distance" in the vast Pacific Ocean, the growth of China's "weapons engagement zone" to encompass American bases in the western Pacific and the sheer mass of China's manpower and weapons, which exceeds America's in many categories.

The risk of Chinese attack, by missiles or bombers, decreases with distance (see chart on next page). But even Guam, America's big military hub some 3,000km from China, is vulnerable. What is more, America's air defence is worryingly thin. It also has few means of passive defence, such as concrete aircraft hangars.

American officers speak of the prospect of war with a mixture of dread at China's growing power ("Every day I am astounded by their capabilities," says one), and optimism that new tactics can achieve victory. They emphasise "distributed lethality", meaning the scattering and constant movement of forces to avoid becoming easy targets, while maintaining the capacity to gather or co-ordinate in attacks. This will rely to an unprecedented degree on America's experience of fighting as a "joint force", in which separate military branches and weapons systems reinforce each other.

Military jets would disperse from big bases, gather in the air for battle and settle where they can on specks of land. They would repeat the pattern as quickly as possible by "hot-pit" refuelling with engines running. Sometimes planes would perch in civilian airports; sometimes on austere airfields, many dating from the second world war, which are being refurbished. Adding ever more concrete to protect aircraft "is a fool's errand", says Brigadier-General Paul Birch, commander of the 36th Wing at Andersen air base, in Guam. "Being in the air is much safer."

Engineers, meanwhile, would aim to repair cratered runways within about six hours. Ground crews would set up pop-up hangars as well as traffic-control centres and data links. A big headache would be how to get fuel and munitions to the right places. One aim of this "agile combat employment" is to force China to expend its large but finite stock of missiles.

Rather than fight near Taiwan, American surface ships would probably hold back, to survive, provide air defence for Guam and other rear bases and blockade Chinese trade. They would "pulse"—sailing briefly in and out of the danger zone—to shoot at Chinese ships and planes.

Brothers with arms

Marines would deploy to "key maritime terrain", especially islands dominating the straits that separate Taiwan from Japan and the Philippines. They would reinforce the local troops, reconnoitre Chinese dispositions and, armed with new missiles coming into service in the next few months, fire on enemy ships. The marines are creating three new "marine littoral regiments", each with more than 2,000 troops, giving up their tanks and many of their howitzers.

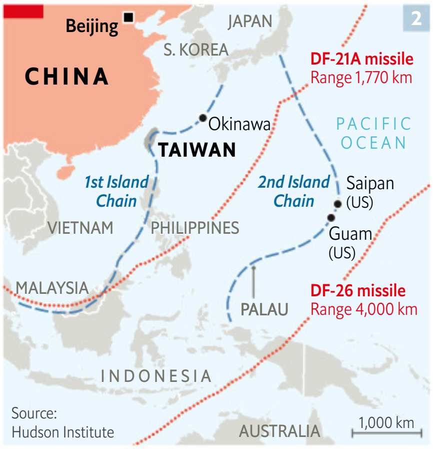
Some critics say these units would be too vulnerable; others reckon that, without deployment to Taiwan itself, they would be too distant to help much in the main battle. The marines, though, argue that they would multiply the threats China must face, "canalise" Chinese ships into vulnerable positions and, above all, "sense and make sense" of Chinese deployments. General David Berger, the marines' commandant, talks of "turning the tables" on China by using an A2/AD strategy to defend the first island chain. America won't have to fight its way in, he says: "We are there persistently, 52 weeks a year."

Dispersed warfare sacrifices efficiency for resilience. To succeed, though, lots of things need to go well. First, command-and-control networks must be able to withstand Chinese electronic attack. Planners talk of a yet-to-be-perfected "kill web", in which artificial intelligence helps "sensors" and "shooters"—including those of allies—operate together even when far apart. Marines on islands, stealthy F-35 fighters, drones and more can all act as nodes. Second, America would need more sophisticated logistics to supply far-flung units. Last, it must persuade allies to risk China's wrath. Their willingness would become clear only as hostilities erupt, which complicates planning.

Early in the war the job of sinking China's invasion fleet—the critical task in defending Taiwan—would fall mainly to submarines and long-range bombers. Though its boats are outnumbered by China's, America retains the edge in underwater warfare. Its attack submarines carry torpedoes, cruise missiles and sea mines. Sooner or later, however, they would run out of munitions, and would have to sail away for several days to replenish in places such as Guam, where they would be vulnerable.

Too far away

Bombers flying from Hawaii, Alaska and the American mainland, meanwhile, would be using munitions that can be fired from beyond the reach of Chinese anti-aircraft missiles. But America's Long Range Anti-Ship Missiles, which can travel 200 nautical miles or more, would probably run out within a week. Thereafter, American forces would have to move closer to Taiwan to sink ships. America's hope is that, by then, China has also run short of long-range munitions.



Source: Hudson Institute

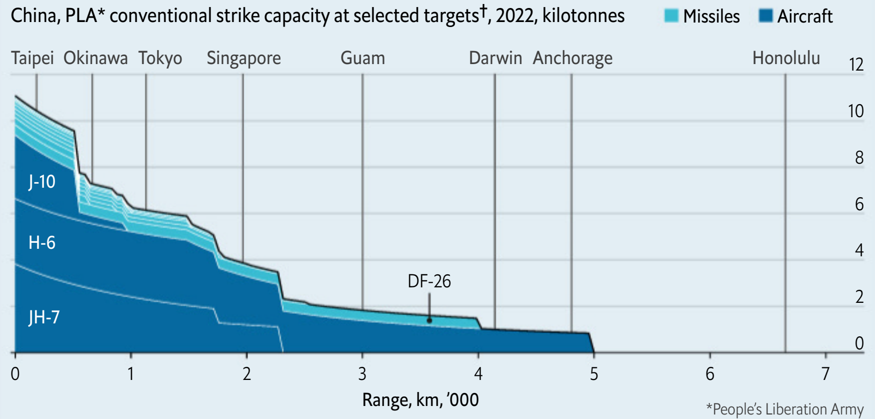
America and China would debate whether and when to attack each others' satellites, potentially turning low-earth orbit into a scrapyard. Some war-games suggest they might refrain from doing so for fear of harming themselves. But as a senior American military official puts it, "The side that shoots first gets a big advantage."

Every stage of the war would be fought in the shadow of nuclear weapons. Mr Biden has talked about reducing America's reliance on nukes, and China espouses "no first use". But the risk of disaster is presumably rising as China expands its arsenal. It will grow from 400 or so warheads today, the Pentagon reckons, to 1,000-odd by 2030 (still less than America and Russia have). A recent war game conducted by the Centre for a New American Security, a think-tank, suggested that both sides underestimate the risk of escalation. This grows if either attacks the other's mainland, or if the conflict becomes protracted.

The toll of even a purely conventional war would be devastating, for the victors as well as the losers. A war game by the Centre for Strategic and International Studies, another American think-tank, found that under its "base scenario" Taiwanese, American and Japanese forces typically severed PLA supply lines after about ten days, stranding some 30,000 Chinese troops on the island. Taiwan survived as an autonomous entity, but was left with no electricity or basic services. America and Japan suffered, too, losing 382 aircraft and 43 ships, including two American aircraft-carriers. China lost 155 planes and 138 ships.

Too close for comfort

China, PLA* conventional strike capacity at selected targets†, 2022, kilotonnes



Source: Hudson Institute

*People's Liberation Army

†On first day of war, assuming all missiles are fired

The economic cost would be enormous, too. RAND estimated in 2016 that a year-long war over Taiwan would reduce China's GDP by 25-35% and America's by 5-10%. The Rhodium Group, a consultancy, concluded in 2022 that the disruption to the supply of semiconductors (Taiwan makes 90% of the world's most advanced computer chips) would cause global shortages of electronic goods, leading to "incalculable" damage to the world economy.

Given the appalling consequences, would America and China really go to war? Chinese officials say their preferred option is still peaceful unification, and deny there is any timetable for an attack. China also has many options short of an all-out invasion. They include economic coercion, a full or partial blockade and the seizure of outlying islands such as Kinmen. China may well embark on this sort of "grey-zone" operation as a substitute for, or a prelude to, a wider attack.

Mr Xi has strong incentives to bide his time, not least because his forces are growing, whereas American defence spending is near an 80-year low as a share of GDP. But he may also feel pressure to attack if Taiwan abandons all pretence that it might ever reconcile with the mainland, and formally declares independence, or if America deploys troops to Taiwan. The year-long conflict in Ukraine is proof that an irredentist autocrat can miscalculate appallingly. Zhou Bo, a former senior officer in the PLA, notes that to achieve its aims, China does not need to exceed America's global might; it just needs an edge in the western Pacific.

Many strategists in America and Asia fear that the loss of Taiwan would replace the American-led order in the region with a Chinese-led one. Japan and South Korea might feel obliged to develop their own nuclear weapons. Rather than constraining China, the first island chain would become a platform for it to project power farther afield. "Taiwan is the cork in the bottle," as an American military official puts it.

America draws solace from Russia's failures in Ukraine, believing they have increased Mr Xi's doubts about his ability to take Taiwan. But to preserve the precarious balance across the Taiwan Strait, America must act with exquisite skill. It needs to reinforce Mr Xi's hesitation by strengthening itself, its allies and Taiwan, but not go so far that he thinks he must attack fast or give up on seizing Taiwan for ever. ■

The Democratic bench

Say it ain’t Joe

WASHINGTON, DC

It looks highly likely that Joe Biden will run for re-election. But what if he didn’t?

President Joe Biden is literally living history. With every passing day he sets a new record for oldest president—the sole octogenarian ever to occupy the Oval Office. When he began his campaign to unseat Donald Trump, Mr Biden intimated that he would not seek a second term, presenting himself as an elder statesman who would calm the nation’s turbulent politics before a younger generation took over. And yet he is now giving every sign that he intends to stay in office for six more years, by seeking re-election in 2024.

It is not as though his age doesn’t show. The president stammers through his speeches, sequesters himself from the press and recently had a minor health scare in the form of a cancerous skin lesion. So why doesn’t Joe want to go?

The proximate cause was the midterm elections, which did not go nearly as badly for Democrats as Mr Biden’s lacklustre approval ratings suggested they might. That halted the sense, once well-established among Democrats, that he was leading the party to disaster and the likely re-election of Mr Trump in 2024. Most insurrectionist chatter of pushing the president out before he wanted to go was quelled. The exception is the declared challenge from Marianne Williamson, a quackish self-help guru who thinks the Avatar movies hold the secret to Middle East peace.

The unexpectedly light rebuke by voters—who only narrowly awarded Republicans the House of Representatives and even granted Democrats an extra seat in the Senate—gave the administration scope to crow about its accomplishments. The president had steered the country out of the pandemic, passed the largest climate-change-mitigation bill in history, repaired international alliances and led the West in supporting Ukraine. A younger president with a similar record would have an unquestioned right to seek re-election.

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But the other impulse that might keep the Democratic ticket unchanged is an extreme kind of risk aversion. The party is terrified of Mr Trump’s return to the White House and the damage that would do. Mr Biden owes his current position to a similarly pragmatic calculation: when the party risked nominating the ultra-progressive Bernie Sanders in 2020, support consolidated around Mr Biden as the only viable option for winning.

This time, too, many Democrats fear that an open primary could be disastrous. Kamala Harris, the vice-president, has developed a reputation for bungling issues assigned to her, like deterring migration at the southern border. Her approval rating among the public is even lower than the president’s. Her gaffes rival her boss’s, but without the available excuse of old age. Yet plenty of donors and perhaps enough voters would find the prospect of passing over the country’s first female vice-president off-putting. The memory of Hillary Clinton’s loss still haunts the party.

Despite her weaknesses, hardly anyone in Washington expects Mr Biden to choose a different running mate. The vice-presidential survival sweepstakes are a quadrennial parlour game, but the last president to actually go through with it was Franklin Roosevelt in 1944.

Mr Biden himself sees it as his mission to defeat Trumpism. "Donald Trump and the MAGA Republicans represent an extremism that threatens the foundations of our republic," he said in a severe speech delivered in Philadelphia last year. In 2020 Mr Biden promised to beat Mr Trump "like a drum"; he thinks he can deliver another thumping in 2024.

But although Mr Biden's credentials as a Trump-beater are impeccable, the calculations in a match against a Republican alternative are less compelling. The president's approval ratings remain underwhelming, barely better than Mr Trump's at this point in his presidency. Recent polling from YouGov shows that only 44% of Democrats are keen for Mr Biden to run again. (Other polls show even less enthusiasm.) Most are unsure who they would rather have to replace him, though. Only 2% say they would like to see Ms Harris at the top of the ticket.

Make way while the sun shines

Democrats are probably right to think that widespread antipathy towards Mr Trump, who has alienated much of the donor class of his own party, would paper over some of Mr Biden's vulnerabilities. But the contrast with Ron DeSantis, the 44-year-old Republican governor of Florida who is closer in age to some of the president's grandchildren, would be particularly extreme. And highly visible: unlike the campaign of 2020, which was largely conducted in lockdown, the coming race will require strenuous campaigning.

There is precedent for a president reneging on a re-election pledge, but it is not a happy one. In 1968, after a disappointing show in the New Hampshire primaries, Lyndon Johnson dropped his campaign for another term just eight months before the presidential election—which his party subsequently lost to Richard Nixon. Still, an open primary might not be as catastrophic as some Democrats fear.

When evaluating a party's presidential bench, conventional wisdom tends to focus on those who campaigned in the previous election. Most of those also-ran Democrats—such as Pete Buttigieg, now transportation secretary, and Elizabeth Warren, a Massachusetts senator—do not inspire much confidence as contenders. Ms Harris's standing is so dismal that she would not freeze the field as Mrs Clinton did in 2016. That leaves room for alternatives.

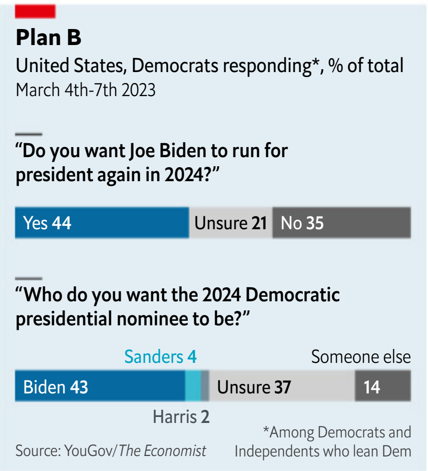
As Democrats have moved away from the progressive stances that were voguish in 2020 and back towards the centre, a crop of state governors, who tend to be more pragmatic than senators, appear more compelling. Rather than opting for progressives like Gavin Newsom in California or J.B. Pritzker in Illinois—both of whom have been unsubtly signalling that they are keen to run for president—Democrats could plump for Gretchen Whitmer, who just won handy re-election in an important Midwestern swing state, Michigan. The newly elected governors of Pennsylvania and Maryland, Josh Shapiro and Wes Moore, are both gifted speakers. Jared Polis, the freethinking governor of Colorado, is an effective tactician.

Then there are governors, like Andy Beshear in Kentucky and John Bel Edwards in Louisiana, who have proved capable of winning in red states. And Gina Raimondo, who was governor of Rhode Island before becoming Mr Biden's secretary of commerce, is arguably the most effective member of the current administration.

If a senator must be chosen, there are mild-mannered newcomers who might suit a general election better than a progressive bomb-thrower. Raphael Warnock is an African-American preacher who won the crucial swing state of Georgia twice in two years. Mark Kelly has done the same in Arizona—and would have the distinction of being the first astronaut president that schoolchildren dream of.

All may be capable, but none will challenge the president unless he excuses himself. Almost every modern president who has garnered a serious primary challenger as an incumbent—Johnson, Jimmy Carter, George Bush senior—has gone on to lose. And no Democrat wishes to be blamed for ensuring their party's loss.

Mr Biden obsessively tries to study the examples of presidents past, and convenes councils of historians at the White House. He may do well to look back beyond the modern era, to the time when George Washington gave up power so that the business of democracy could properly flourish. After accomplishing the Herculean task of defeating Mr Trump, Mr Biden has already scored unexpected success. That is all a fitting coda; losing to a sprightlier Republican would be an undignified end for America's eldest statesman. ■



Plan B

United States, Democrats responding*, % of total

March 4th-7th 2023

Source: YouGov/*The Economist*

*Among Democrats and Independents who lean Dem

Detransitioners

Will suing change transgender care?

WASHINGTON, DC

The backlash to medical transitioning

FEW ISSUES divide Americans, and their politicians, as much as medical care for children with gender dysphoria. Governors in six Republican states have signed bills that restrict or ban such care, which some see as "child abuse". In response, some of these states are being sued, and governors in several Democratic states are putting protections in place for a treatment that they see as "life-saving". Do not expect the politicians to try to settle their differences—they have too much to gain from whipping up outrage among their supporters. Instead the serious action is likely to play out in the courts.

On February 22nd a lawsuit was filed that could mark the start of a backlash. Chloe Cole, an 18-year-old who has become a voice for detransitioners in America, is suing Kaiser Permanente, a large American medical provider, for medical negligence. Ms Cole decided at the age of 12 that she was a boy, was put on puberty blockers and testosterone at 13 and underwent a double mastectomy at 15, before changing her mind and detransitioning at 16.

The complaint, filed in California by the Centre for American Liberty, a conservative non-profit that supports Ms Cole, accuses Kaiser of performing a "mutilating, mimicry sex-change experiment" on a vulnerable girl instead of focusing on her complex mental health. Her lawyer, Harmeet Dhillon, said medical professionals "permanently disfigured her for profit". Ms Cole, whose lawyers say she meets the criteria for being on the autism spectrum, says she is particularly concerned about her fertility and about pain and discomfort caused by skin grafts.

Kaiser's broad statement, in response to a request to comment on the allegations, says it "provides patient centred gender-affirming care that is consistent with the standards of medical care and excellence". It emphasises that it respects "the patients and their families' informed decisions about their personal health". But a crucial part of the claim is that Ms Cole says she and her parents were not informed of alternative, less invasive treatments, such as psychiatric care. According to the complaint, physicians suggested that her gender dysphoria would "never resolve unless she chemically/surgically transitioned". Ms Cole told a rally outside the Capitol in September that the clinic presented her case to her parents as a choice between having a suicidal daughter or a trans son.

Proponents of adolescent medical transition say detransitioning is very rare. Opponents point to two recent studies that suggest 20-30% of patients may discontinue hormone treatment within a few years.

So far there has been little litigation from "detransitioners", people who received care for gender dysphoria but then decided to stop or reverse the treatment. The medical procedures they underwent are relatively new; it can take years for people to change their minds or to start experiencing negative effects. Moreover, many states have short statutes of limitations, says Candice Jackson, a west-coast lawyer. Some state politicians have promised to change those restrictions.

Another complication is that, in contrast to botched surgery, claiming and measuring harm is more difficult when a doctor has provided exactly what was promised. Muddying matters further still is the belief that medical practitioners are shielded from litigation by the fact that they can say they were following their medical bodies' guidelines on gender-affirming care, a little-tested assumption.

Few law firms want to risk being labelled transphobic, being "cancelled" or losing clients. Ms Jackson co-founded her own firm after she realised how hard it was for detransitioners to find legal representation. There has been little money in this business, at least up to now. And, adds one paediatrician, many detransitioners have a history of mental illness. They may make poor witnesses. But a credible star witness could break the mould. This may turn out to be Ms Cole, whose lawyers claim they have been contacted by others from across America, who are preparing lawsuits on behalf of their detransitioner clients.

Cases such as this will take time to be heard and ruled on; some may be settled behind closed doors. Ms Jackson says she is preparing for an arduous battle, much like the one fought against Big Tobacco. Legal victories for detransitioners could have knock-on consequences, by making insurers come to regard gender-transition treatments as a liability. That would push up the costs of providing the treatment, and make providers more careful about advertising.

Most Americans favour protecting trans people from discrimination, but they sharply disagree on medically transitioning children. Whereas 72% of Republicans believe it should be illegal to provide a minor with medical care for gender transition, just 26% of Democrats agree, according to the Pew Research Centre, a think-tank. Activists who believe such care saves lives have tried to discredit Ms Cole, by focusing on the support she receives from firebrands on the right. But the facts of this case—if they are as claimed—could give at least some of them pause for thought. ■

Drug and drugs

O beautiful for spacious highs

WASHINGTON, DC

As more Americans get high, medical drawbacks of marijuana come to the fore

WAKING UP in the middle of a surgery is the stuff of nightmares. Your eyes squint open as a surgeon digs her scalpel into your abdomen. The operating team becomes frantic; an anaesthesiologist rushes to administer a stronger dose. Though some such horror stories have made headlines, thanks to modern medicine that kind of situation is exceedingly rare. But the risk of it happening may be rising and anaesthesiologists are taking note. The culprit is not an invasion of evil doctors or a bad batch of drugs, but the rise in Americans' casual use of a substance that many think is harmless: marijuana.

A study published in 2019 found that patients who used marijuana on a daily or weekly basis needed up to three times the typical anaesthesia dose to stay under while they were in the operating theatre. Smoking weed before surgery can make patients confused, irritable and sometimes even violent when they wake up. But the problems do not end there. A working paper presented in October, which has yet to be peer-reviewed, suggests that weed can hinder recovery, too. Of the nearly 35,000 Cleveland Clinic patients assessed, those who used marijuana within 30 days of their operation experienced 14% more pain in the day after surgery and took 7% more prescription opioids to ease it. Why this might be is, like anaesthesia itself, something of a mystery.

The problem is magnified by a growing number of Americans getting high. This past November Maryland and Missouri joined 19 states and Washington, DC, in legalising recreational marijuana. New York recently awarded its first cannabis retail licences; in January Connecticut stores got the green light to start selling it. The share of Americans who report smoking weed jumped from 7% in 2013—the year before legal sales began in Colorado, the pioneering state—to 16% in 2022. That spike is at least partly driven by the change in laws: a study of twins living in different states found that legalisation led to a 20% uptick in use.

Meanwhile federal regulation remains tight, making marijuana hard to study. The Controlled Substances Act of 1970 classified weed as a Schedule One drug, just like heroin. Back then it was deemed to have a "high potential for abuse" and no established medical use. Studies from around the world have since shown that marijuana can relieve chronic pain, dull chemotherapy-induced nausea and help treat epilepsy. Even though in 2019 the World Health Organisation recommended rejigging the categorisation, in America this has not been done. That makes it tricky to conduct clinical trials. Labs must be fitted out with elaborate safety equipment for the Drug Enforcement Administration to give its stamp of approval and funding is scarce. As more and more Americans light up joints, other grim side-effects could be lurking.

To clinicians, the downsides for surgery are clear enough to justify changing medical protocols—even before more studies come in. In January the American Society of Regional Anaesthesia and Pain Medicine released guidelines on how to screen patients for marijuana use before surgery. Pregnant women should be discouraged from smoking weed, the organisation said, and non-emergency surgeries should be postponed by at least two hours if the patient comes in blitzed. A slew of other new reports warn anaesthesiologists of the mounting risks.

The common perception that marijuana eases nerves works against doctors. Some people seem to be getting stoned before they arrive at the hospital in order to calm themselves down. New users may be particularly likely to smoke for such a purpose. For a better experience, patients should forgo the parking-lot hit. *Economist* readers will now know better.

Nil by mouth

Any way you add it up . . . MATH COUNTS!

Education reform

How not to close schools

Ageing countries need fewer schools. America will find closing them hard

At a meeting earlier this year, board members in Seattle's biggest public-school district were treated to a grisly chart. Over five years the number of full-time staff on the district's payroll has drifted upwards, even as the number of pupils on its books has fallen. In September teachers won a pay rise following a strike that delayed the new school year. But enrolment could keep shrinking for a decade, reckon district leaders, who warn of budgetary black holes. Threatened bankruptcy may eventually require "consolidating", which may mean shutting down schools.

Pupil numbers are falling in urban schools across much of America. As a result of rock-bottom fertility rates and lower-than-usual levels of immigration, the total number of children in the country declined by 1m in the ten years to 2020. Many big cities have an added problem: families have been leaving. Chicago's main public school district has lost a fifth of its pupils in a decade (though some of these have decamped to charter and private schools). Los Angeles has lost a quarter. District leaders in that city say numbers could fall a further quarter or so by 2030.

The pandemic speeded up these woes. Parents who already had itchy feet found that a plague made their cities less appealing. Urban schools kept remote learning longer than others; that gave some families extra reason to leave. Enrolment in New York City's public schools has fallen by 10% in the three years since the disaster started; in a few of its neighbourhoods the decline is almost a fifth. Families with children under five were especially likely to leave big cities during the pandemic, suggest data from the Census Bureau. So the full impact may not yet have registered.

Class divides

School districts are generally funded on a per-pupil basis. Even small declines in enrolment may therefore be hard. Some of the children who left city schools during the pandemic may end up returning to class: a proportion are home-schooling, and may tire of that. But the other trends that have been thinning downtown classrooms will probably not reverse soon, even if immigration starts nudging the number of children in America back up. In some cities the need to close schools is growing. About 1% of traditional public schools shut up shop each year, says Douglas Harris of Tulane University (the closure rate is 5% for charter schools and 3% for private ones). The number will probably rise.

Recent battles suggest that this is going to hurt. Protests, including a hunger strike, broke out last year after school-board members in Oakland, California, voted to close or merge several schools. Angry locals installed a new board; in January it said it was cancelling many of the cuts. In Chicago about one-third of schools are operating in buildings at only half-capacity, or less, according to local government data analysed by "Wirepoints", a blog. The smallest has around 30 youngsters and a little over 20 staff.

The patchwork way in which American schooling is governed—by board members in some 14,000 districts—may make it more difficult than in other countries for schools in large metro areas to shrink effectively. America's teaching unions are unusually tetchy: their hostility towards testing has sometimes prompted boards to declare, gallingly, that a school's results will play no role in deciding which ones will close or merge. Tensions about race make things more complicated. Families in inner cities sometimes suspect that their schools have been earmarked for closure only because parents in richer, whiter areas have more power to make a fuss.

Dragging feet rarely helps. Smaller classes do not reliably boost results. Excellent teachers are more important; training and rewarding good ones is easiest if they are not thinly spread. Smaller schools also find it more difficult to provide all the courses and extra-curricular activities that American education ought to offer. Leaders of good school systems elsewhere in the world have sometimes been ruthless about closing small institutions. In 20 years the number of comprehensive schools in Finland, for example, has shrunk by about 40%.

Planning ahead would save trouble. When New York City closed schools ten years ago it found enough time and money to shut some of them slowly, grade by grade. That gave youngsters who did not want to move the option to age out. Authorities in Chicago have given teachers who seem likely to lose their jobs an early chance to retrain for roles in high demand. But too often talk of shuttering schools starts only when things are desperate, says Paul Hill of the Centre on Reinventing Public Education, a think-tank. That forfeits the chance to close schools "respectfully and transparently". Instead, doing things in a rush just makes district leaders look "as if they are stealing something".

The worry is that few urban school districts are taking their problems seriously enough, says Marguerite Roza, a school-finance expert at Georgetown University. Since the start of the pandemic they have been handed lots of federal relief money. Some have used this merely to delay decisions about downsizing that were already overdue. The extra cash that is sloshing around has also made unions more likely to demand pay rises and bonuses—even in places where drops in enrolment have been sharp. A cliff edge approaches next year, when relief funds are set to expire. At the moment, it seems the rows that follow will be about everything except how best to help children learn. ■

Voting laws

Roll reversal

WASHINGTON, DC

How some Republican states made voter fraud easier

IF REPUBLICANS have made election integrity a core issue, this week marked something of a U-turn for the party's state officials. On March 6th Florida, Missouri and West Virginia—all Republican states, where the party controls the offices of governor, secretary of state and attorney-general—withdrew from a multi-state data partnership intended to prevent voter fraud. The trio of election officials cited concerns over data security and a partisan adviser in their exit letters.

The Electronic Registration Information Centre (ERIC), with which they cut ties, is a coalition that helps election officials sustain accurate voter rolls and identify fraud. It does so by comparing voter data across member states to a "death master file" from the Social Security Administration and driver-licence records. Since its inception in 2012, ERIC has spotted 1m duplicate voters and taken over 570,000 dead people off the rolls. By January 2022, 33 states along with Washington, DC, had joined the effort.

For a decade ERIC was celebrated as a rare bipartisan triumph. States like Connecticut and Oregon joined forces with Utah and Texas. That started to change in early 2022 when Gateway Pundit, a conspiratorial blog, made the outfit its target. Known for spewing hoaxes about vaccines and elections—in 2021 Google banned the site from running ads due to misinformation—the blogger claimed that ERIC was manipulated by left-wingers and bankrolled by George Soros, a progressive philanthropist. Neither was true.

One week later, over concerns of "questionable funding sources" and "possible partisan actors", Louisiana became the first to pull out of ERIC. In January, Alabama's newly-elected secretary of state also cut ties. A February board meeting, during which member states refused to adopt proposed bylaw amendments, was the catalyst for three more states to defect this week.

The leavers object to the involvement of the only non-voting board member, David Becker, a former Department of Justice official who founded ERIC. But claims of his liberal bias fall flat: his most notable case was against Georgia Democrats for gerrymandering and his non-profit, which gave $65m to states for non-partisan election education, is run by experts from both parties. (Both Florida and Missouri received grants.) The data-security concerns they raised were not serious enough to persuade the majority of member states to vote for change.

"This is all an effort to create more chaos, to weaken the guardrails of democracy and allow for losing candidates to spread more lies," says Mr Becker. States that defect hurt themselves most. Unorderly voter rolls make for delays. Come 2024, voters in these states will face lengthy lines at polls and more trouble with mail-in ballots. Confusion and longer waits for results will only incite more mistrust.

More states could yet pull out of ERIC. Alabama and Missouri plan to craft new systems to clean voter rolls. But replicating it in the short-term is infeasible—it took ERIC three years to get its data-sharing apparatus up-and-running. John Ashcroft, Missouri's secretary of state who led the withdrawal, is not sure how his voters feel about it. That does not matter. "True leaders do what needs to be done without taking a poll," he says. ■

Burials

Soul soil

NEW YORK

Quite a few young Americans plan to end their days as compost

AS A 30-YEAR-OLD architecture student in 2013, Katrina Spade began pondering her mortality. Specifically, what would happen to her body after she died. Ms Spade, who was enrolled at the University of Massachusetts Amherst at the time, was in the minority: only about a fifth of Americans plan their own funerals. Traditional burial, which 44% of Americans choose, didn't feel right for her, and nor did cremation, which has become the more popular option (see chart). Neither did a "natural burial" which, although pleasingly green, would probably have required her to be laid to rest outside her home city due to lack of space: New York City, for example, banned burials in Manhattan south of 86th Street in 1851. She grew increasingly nonplussed that "there was no urban ecological death-care option" available.

Then the brainwave came. If farmers could turn whole cows into compost, why not the same with humans? A decade on from presenting the idea in her master's thesis, Ms Spade now runs Recompose, a "human-composting" facility in Seattle. For many, it's a difficult idea to chew over. A body is placed in a vessel alongside woodchips, straw, and alfalfa, which together create a warm atmosphere of carbon, nitrogen, oxygen and moisture. It is then left for up to twelve weeks, during which microbes help break it down. It may all sound rather grisly, but the process ends with a small mound of soil, which is then given back to the families and can be used to plant trees or nurture plants. Later this month, New York will become the sixth state to allow it.

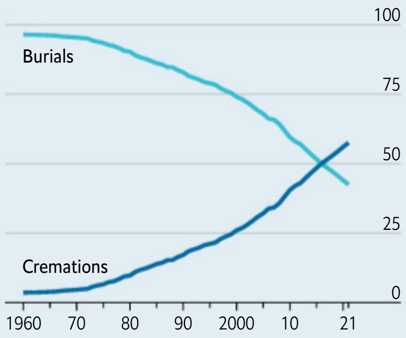
The idea is not without its detractors. For religious groups with strict burial customs it goes against core teachings. Edward Mechmann, the director of public policy for the Archdiocese of New York, argues that the Catholic church's belief in the "unity of body and soul" renders the process disrespectful, a "violation of dignity". The state's Catholic Conference laments that "human bodies are not household waste", saying composting "is more appropriate for vegetable trimmings and eggshells".

The environmental benefits are clear, though. Every year, burials in cemeteries across the country require vast quantities of steel and concrete to reinforce graves, as well as millions of litres of embalming fluid, which seep harmful chemicals into the ground. Meanwhile, cremating one corpse emits the carbon-dioxide equivalent of driving about 750 kilometres in a car.

Human composting, on the other hand, is thoroughly green. There are bills that would legalise it currently being considered in five states, including Nevada, Minnesota and Connecticut. Recompose has several thousand people from across the country on its waiting list, a quarter of them under the age of 49. While many remain instinctively repulsed by the idea, the human-composting industry would appear to be growing in fertile soil.

Eternal flame

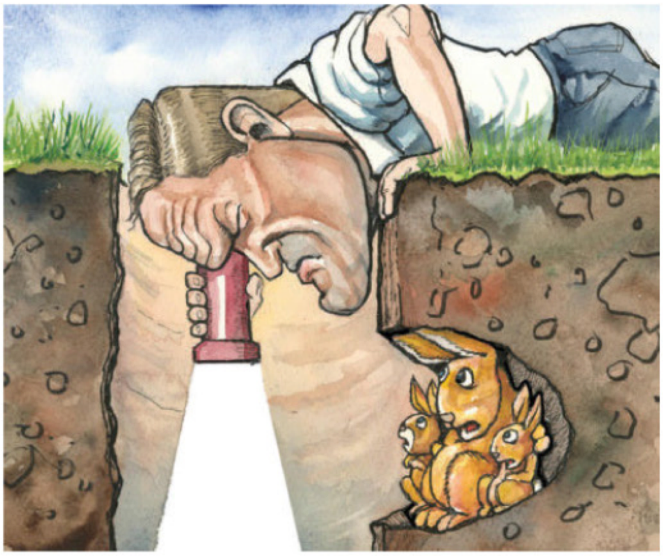
United States, means of body disposal, %



Source: Cremation Association of North America

Lexington | Paranoia strikes deep

And, in the halls of Congress, it can make for ineffective government



IF YOU set out to crystallise what is self-defeating and immiserating—yet, admittedly, also kind of funny—about American politics and governance, you might come up with something quite like the Congressional Committee for the Spelunking of Rabbit Holes (technically operating under a less precise name, the Select Subcommittee on the Weaponisation of the Federal Government).

The subcommittee's chairman, Jim Jordan, was a champion wrestler in college, and he retains both impressive pugnacity and a lean, bantam physique incidentally accentuated by his habit of appearing in his shirtsleeves. An astute politician from Ohio, he has vaulted into the Republican leadership without dulling his positions as a founder of the razor-edged Freedom Caucus. Mr Jordan believes Americans' First Amendment rights are under assault, and there is certainly cause for concern, or at least vigilance.

He has said he suspects deep corruption, that President Joe Biden and other Democrats are using federal agencies—as well as big tech firms and left-wing news media—to crimp Americans' rights for the benefit of his family and party. Though the name of the subcommittee may suggest prejudgment, Mr Jordan insists his focus is "facts and truth". He faces a hard road, for several reasons.

No party will ever again make the mistake the Republicans made when they chose to object to the January 6th committee by not nominating members to it. That freed the committee's Democrats, and the two Republicans who defied their leadership to take part, to script a coherent and at times riveting television series about how Donald Trump tried to overturn the 2020 election.

Mr Jordan, by contrast, is stuck with Democrats, including the formidable ranking minority member, Stacey Plaskett of the Virgin Islands, who can grill his witnesses and call their own. At the first hearing, last month, Mr Jordan said "dozens and dozens of whistle-blowers" at the FBI were coming forward. On March 2nd Ms Plaskett and other Democrats released a book-length report on the three FBI witnesses they know of so far, describing them as embracing conspiracy theories about the January 6th attack ("Insurrection my a$$," tweeted one of them. "It was a set-up."), and offering extreme opinions but no evidence of misconduct. "We urge Chairman Jordan to schedule the public testimony of these individuals without delay," they wrote, drolly.

Ms Plaskett, a former prosecutor, says she hopes Mr Jordan is withholding better witnesses he plans to spring on her later. "I'm hoping that we're playing chess and not, you know, Connect 4," she says. "Right now it feels more like Connect 4."

Also unlike the January 6th committee, this subcommittee is following the standard approach to public questioning, under which members alternate by party. The result at the first hearing was a bewildering oscillation for almost four hours between alternate realities, compounded by lousy questions, a bipartisan problem. Most members addressed their friendly witnesses, treating them as backboards against which to thwack their talking points. (Q: "Is it ever appropriate to turn congressional oversight authority into a weapon to harm a political opponent?" A: "No.")

Even Mr Jordan's fellow spelunkers posed a problem for him. Each vanished down a rabbit hole of their choosing, often popping out of yet another one: The Twitter Files, Russiagate, the FISA court, investigations of uproar at school boards, Hunter Biden's laptop, Anthony Fauci, the surveillance state—a litany implicating just about every acronym from the ATF to the FTA. Each theory would require dizzying explanation for the blessedly uninitiated.

Kat Cammack, a Republican from Florida, noted that agencies like the IRS were buying "millions of dollars' worth of ammunition and tactical ballistic gear", and stirred that concern with another one to conjure a menacing phantom: "Can you detail why the capability, coupled with extensive warrantless data-collection efforts, of these agencies should concern everyday Americans?" she asked a witness called by the Republicans, Jonathan Turley, a law professor. A seasoned witness, Mr Turley ignored the bit about weaponry and filibustered about data collection.

Mr Jordan's biggest problem may be that no vast underground warren connects all these holes. That does not mean the concerns are crazy. The IRS has been buying weapons. But it has been doing so since 1919, for its criminal-investigation division. It is careless to hint that Mr Biden is turning the IRS into his secret police. But it would be refreshingly workmanlike for Congress to check that the programme is justified and, if so, rightly configured.

A virus made in America

At least until recently both parties, as Mr Turley noted, were worried about government's ability to vacuum up data via social-media companies. But the logic of polarisation dictates that if one party expresses a concern the other must denigrate it. Not long ago the Democrats were the ones complaining about partisanship at the FBI, an agency whose powers and history of violating Americans' civil liberties justify regular congressional scrutiny.

When Republicans seized on the hypothesis that covid leaked from a Chinese lab, Democrats—and, yes, the left-wing media—mocked their suspicion. Now Mr Biden's Department of Energy has said the theory is probably correct. Recently, at a conservative conference near Washington, Mr Jordan pointed to that as evidence that, despite "the left and the mainstream press and big tech", the truth will win. "The only thing we get wrong", he said, "is it's always worse than we thought."

And so the two parties' reciprocal scorn intensifies, along with suspicions of the evil the other side is plotting. To the satisfaction of their most partisan supporters, 21 congressmen backed by dozens of aides are devoting countless hours battling over suspicion piled on suspicion, while questions about how to make government more effective go unasked. You might almost suspect some sort of conspiracy. ■

Argentina

How not to deal with China

BUENOS AIRES

A pro-Chinese government is wasting the opportunities China offers

They should be a perfect match, like a steak and a glass of Malbec. Argentina has fertile land and skilled farmers. China has 1.4bn mouths to feed. Bilateral trade should be sizzling. But Argentine policy is so erratic that China is often left asking: where's the beef?

Sometimes, literally. In 2018 China opened its market to Argentine beef. At first, trade boomed. However, in 2021 Argentina slapped a beef-export ban on itself. "The Chinese couldn't believe it," recalls Patricio Giusto of the China-Argentina Observatory, a think-tank.

The convoluted logic went like this. Domestic meat prices were rising, upsetting barbecue-loving Argentines. President Alberto Fernández reasoned that if he stopped foreigners from wolfing Argentine beef, there would be more for domestic consumers. The ban did little to curb inflation, which is now nearly 100% year on year and mostly caused by the government's frenzied money-printing. But the export ban gored Argentine farmers and infuriated their Chinese customers.

Cleverer engagement would yield huge benefits. Argentina desperately needs capital; China has deep pockets. China craves minerals; Argentina has mountains of them. Rather than exploit those economic opportunities, Argentina's current government of prickly left-leaning Peronists has given priority to political and diplomatic ties with China, which alarms the United States. A more pragmatic one would seek to get along well with both big powers, while taking full advantage of the way the Argentine and Chinese economies complement each other. Argentina's next national election, due in October, may bring such a government to power.

In recent decades the economic relationship between Argentina and China has burgeoned. Bilateral trade has increased from $2.3bn in 2001 to $26bn last year. Several big Chinese investment projects have been announced. More than half of the 62 loans doled out by Chinese commercial banks in Latin America between 2007 and 2021 have gone to Argentina, according to the Inter-American Dialogue, a think-tank in Washington (see chart on next page). Most of this has taken place since 2015. A branch of ICBC, China's biggest commercial bank, dominates the skyline near the presidential palace in Buenos Aires.

Lately, though, progress has stalled. Wherever Argentina has a comparative advantage, the Fernández government erodes it. The total ban on beef exports has gone, but bans remain on seven popular cuts of beef, such as short ribs. Crops are whacked with export taxes ranging from 7% (for sunflower oil) to a crushing 33% for soya. This discourages investment and costs Argentina a fortune. If it had halfway sensible policies it could add $25bn a year to grain and oilseed exports within a decade, estimates David Miazzo of Fada, a think-tank. That is equivalent to 5% of today's GDP. But the government is desperate for short-term cash, and shiploads of grain are hard to hide and easy to tax.

Chinese investments that generate headlines often run into trouble. A year ago China announced an $8bn deal to build a nuclear power plant near Buenos Aires. It was eager to show off its Hualong One nuclear technology, which so far produces power only in China itself. It also hoped to lock Argentina into the kind of long-term relationship that nuclear projects require.

The problem is that Argentina cannot afford the price tag (which with interest could add up to $13bn, estimates Julian Gadano, a former energy official). Its net foreign reserves are a mere $2.5bn, according to Econviews, a consultancy. Argentina owes more than any other country to the IMF, and is trying to secure another lifeline. Having renegotiated the nuclear project several times, Argentina is begging Chinese lenders to cover 100% of the cost, up from 85%. The project "is not going to happen", predicts Mr Gadano.

In 2014, during the presidency of Cristina Fernández de Kirchner (who is now the country's vice-president), Argentina borrowed $4.7bn from three Chinese state-owned banks to build two hydroelectric dams in Santa Cruz, Ms Fernández's political stronghold. Interest payments are now a big drain on the budget, and the dams have yet to produce any electricity. Last year Chinese firms seemed well placed to win a contract to build a pipeline to Buenos Aires for gas from Vaca Muerta, one of the world's largest deposits of shale gas and oil. But after some wrangling, they abandoned the bidding. In 2020 Sinopec, a Chinese oil giant, pulled out of Argentina after squabbles with labour unions.

The incentive to invest in energy is dulled by price controls. Households pay hardly anything for electricity and waste it copiously. Power cuts are common.

Regardless of their line of business, "Chinese firms have the same problems as all companies that want to invest in Argentina," says Gerardo Morales, the governor of Jujuy province. In addition to high inflation investors must contend with currency controls, which make it hard to repatriate profits. A system of multiple exchange rates (there are at least a dozen for the dollar) causes confusion and distortion. Exporters must surrender their dollars at the official rate, which is roughly half what they are worth. The government allocates cut-price hard currency in a process riddled with graft. Special rates apply to such things as rock concerts (the "Coldplay" rate) and streaming services (the "Netflix" rate). Chinese firms find it hard to operate in a country where policy changes direction as often and unpredictably as a football at Lionel Messi's feet.

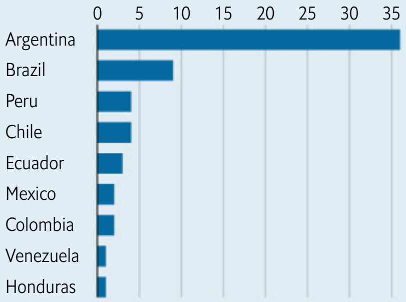
Argentina seems more interested in being China's ally than its supplier. Vice-President Fernández (no relation to her nominal boss) recently gushed that China was the "most successful capitalist system". China plays up similarities between Taiwan and the Falkland islands, a British territory that Argentina claims. (One parallel it does not mention is that the Falkland islanders, like the Taiwanese, have no desire to be ruled by their bigger neighbour.)

Many of Argentina's recent ventures with China are long on political symbolism and short on economic substance. Some of these have irked the United States.

Bankers' pet

Number of commercial loans from China*

2007-21



*From China's "big five" commercial banks: ICBC, Bank of China, ABC, CCB, Bank of Communications

Source: Inter-American Dialogue

Last year Mr Fernández announced that Argentina would join the Belt and Road Initiative, a Chinese global infrastructure scheme. The agreement included no new financial commitments. China has built a space observatory in Patagonia, which it claims is purely for scientific purposes—the far-southern latitude gives it a view of the cosmos unavailable from China. Others suspect it is spying; unlike a similar European observatory, China's is closed to outsiders and staffed by military folk. In September the governor of Tierra del Fuego, on the tip of Argentina, offered his province as "the gateway" for China to Antarctica, with a logistics base for ships.

The Fernández administration may have underestimated how hostile the United States has recently become towards China, and how determined it is to prevent China from gaining a foothold in its hemisphere. Anything that looks like Chinese military activity in the region is sure to infuriate any American administration. Although Argentina is not like the dictatorships in Cuba or Venezuela, which the United States regards as foes, some hotheads in Washington suggest it is heading that way. On February 28th María Elvira Salazar, an American legislator, claimed that Argentina had struck a deal with China to build Chinese warplanes in Argentina. She called it "a pact with the devil that could have consequences of biblical proportions". The Argentine government said there was no such plan.

Although the Peronists are suspicious of the government in Washington, they do not want to alienate it, not least because support from the IMF depends on American goodwill. They have begun to walk back from the deals with China to which the United States most objects. Argentina now says it will build the maritime base in Tierra del Fuego with its own money, which means it is unlikely to happen. An Argentine plan to buy Chinese fighter jets was cancelled in December; Argentina may now buy vintage American jets instead, if it can find the money.

Frustrated with Argentina's central government, some Chinese investors are dealing directly with provincial governments. Governor Morales in Jujuy has made multiple trips to China. Jujuy's arid soil is little use for farming, but it has sunshine and minerals. A solar park at Cauchari, built high on an *altiplano* (plateau) with Chinese money and technology, yields enough electricity for 160,000 homes. A nearby $852m Sino-Argentine lithium project is expected to start producing the metal, used in electric-car batteries, this year. Mr Morales says Argentina has "great opportunities…in a world hungry for food and energy". It would receive "far greater investment flows" if it scrapped capital controls and had only one exchange rate.

The election in October is expected to bring in a government with saner economic policies, which ought to help Argentina's commercial relations with China. It may also be less willing than the Peronists are to promote China's ambitions in the western hemisphere. "We are democratic and believe in human rights. We don't [share the Chinese] vision of the world," says a senior member of the opposition. But economically, "they need what we have, and we should take advantage of that, [by exporting] minerals and food." Mr Giusto agrees. Uruguay, Argentina's better-governed neighbour, maintains excellent relations with the United States and good ones with China, he notes. It exports beef and behaves predictably.

China's communist regime may grumble if Argentina elects a government that is less friendly to its strategic aims and closer to the United States. But if that makes Argentina's economic policy less wacky, Chinese investors may quietly welcome it. ■

A ray of hope in Jujuy

Free trade in Asia

Donald Trump could not kill it

SEOUL, SHANGHAI, SINGAPORE AND TOKYO

China is clamouring to join the Trans-Pacific Partnership's successor

DONALD TRUMP entered the White House in 2017 with a long hit list. The Trans-Pacific Partnership (TPP), a trade deal which he called "a rape of our country", was near the top. Just three days into his presidency, Mr Trump moved to kill it—and succeeded only in denying America its benefits. While America ditched the pact, others defied expectations by staying wedded to it and the principles of free trade and multilateral rule-making it represented. Five years ago this week, ministers from the 11 remaining countries met in Chile to sign the renamed Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP).

How has it fared? Without America—whose Democratic president, Joe Biden, dares not offend the protectionists in his party by undoing Mr Trump's error—the economic impact has been less than was once envisaged. Certain pairs within the group, especially those such as Vietnam and Canada that did not have free-trade agreements, have seen big rises in trade. In some industries import values within the bloc rose by as much as 22.9% and export values by as much as 11.6% for every percentage-point drop in tariffs, reckons the Asia Competitiveness Institute, a research centre in Singapore. But external shocks—the pandemic, the US-China trade war, the actual war in Ukraine—have muddied the picture and complicated data analysis.

Companies have also been slow to seize the potential gains from big tariff cuts. And member countries have themselves failed to implement the behemoth agreement fully. Cracking down on laggards was, after all, supposed to be America's role. The CPTPP has no dedicated secretariat with full-time responsibility for enforcement, notes Deborah Elms of the Asian Trade Centre in Singapore: "They didn't set one up because we anticipated that this is where America will hold feet to the fire."

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28 Banyan: Singapore's first-family feud

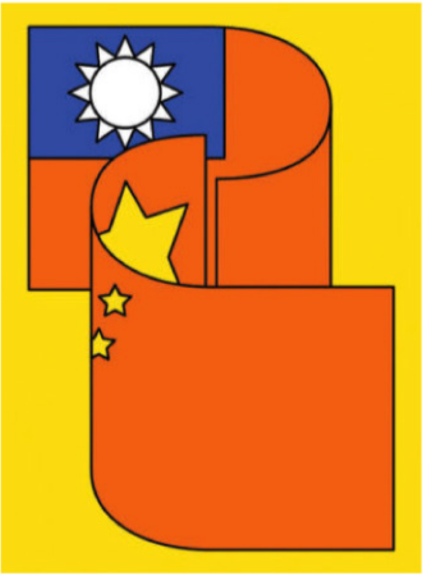
Even so, other countries, including America's greatest rival, are clamouring to join the deal. Indonesia, the Philippines, South Korea and Thailand have all expressed interest in joining. The pact may soon have its first new member: Britain is expected to reach an "agreement in principle" to join as early as this week. That will put the spotlight on applications from China and Taiwan, which were submitted in late 2021. The group's handling of those duelling bids will have big implications for the balance of power in Asia, as well as the future of what's left of the liberal international trading system. "Just as the mettle of the TPP project has been tested by the United States, now it will be tested by China," says Mireya Solís of the Brookings Institution, a think-tank in Washington.

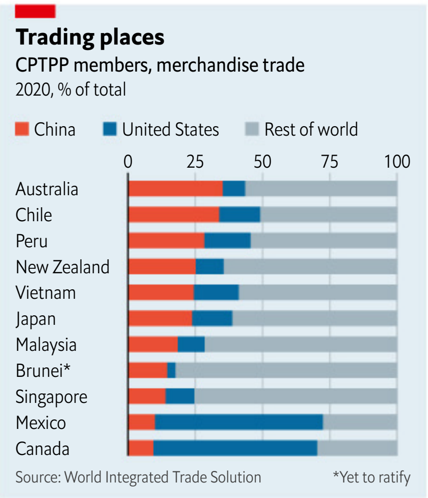
The CPTPP originated in the halcyon days of the 1990s, when great-power competition was over, America was ascendant and globalisation in vogue. The leaders of the Asia-Pacific Economic Co-operation, or APEC, grouping gathered at a beach resort in Bogor, Indonesia in 1994, and, clad in intricately patterned Javanese shirts, pledged to pursue "free and open trade and investment" in the region by 2020. A big step towards that vision came in 2005 when an agreement between four small economies—Brunei, Chile, New Zealand and Singapore—caught America's eye. Australia, Peru and Vietnam joined the talks that ensued, followed by Canada, Malaysia, Mexico and, in 2013, Japan. The monster free-trade pact taking shape became the economic centrepiece of Barack Obama's much-touted "pivot" to Asia. Encompassing some 40% of global GDP, the TPP was sold in America as offering open markets and enforcing high standards to counter China's growing unruliness.

If its economic punch has been subdued, the CPTPP has had much more impact on global trade rules. Its provisions on digital governance, customs procedures and intellectual-property protection have become reference points for deals elsewhere. "These rules are living beyond the corners of CPTPP," says Wendy Cutler, a former American official who negotiated the TPP. America's revised free-trade deal with Mexico and Canada, the United States-Mexico-Canada Agreement (USMCA), lifted sections on digital commerce from the CPTPP. This influence is invaluable at a time when the "multilateral system as a whole, the World Trade Organisation at its core, are under threat like never before," argues Shiro Armstrong of the Australian National University in Canberra.

Britain's accession will expand the deal's reach. "It can show it doesn't have to be just an Indo-Pacific agreement," Ms Cutler says. For the British government, too, the political pull is stronger than the economic one. Joining would, it is estimated, boost the baseline level of British GDP by £1.8bn or 0.08%. But MPs in the ruling Conservative Party love trade deals and are desperate to secure visible benefits from leaving the EU and to ensure that Britain has a degree of influence in the Indo-Pacific.

Equally important, the British precedent should help set high standards for the CPTPP itself. Britain's strict accession process, which admitted no exception to the club's rules, was intended to establish a "UK model" for future applicants, says Munakata Naoko, a former Japanese trade negotiator. China will try to put that to the test. Its government has in recent months been emphasising its intention to join the CPTPP; China's departing prime minister, Li Keqiang, called for "active steps" towards accession during a speech before the National People's Congress on March 5th.




Trading places

CPTPP members, merchandise trade

2020, % of total

Source: World Integrated Trade Solution

*Yet to ratify

There is a lot of scepticism about China's application. China and many existing CPTPP members already belong to the Regional Comprehensive Economic Partnership (RCEP), a lower-standard Asian mega-trade deal signed in 2020. China would have to undertake major economic reforms to join the CPTPP on its current terms. The country lags far behind many of the CPTPP's standards on treatment of state-owned enterprises, intellectual property, labour rights and digital trade. The "heavy hand of state interference" in recent years has "moved them farther from the starting line", says Jeffrey Schott of the Peterson Institute for International Economics, an American think-tank.

Yet many policymakers and trade experts in Asia treat the possibility of Chinese membership more seriously than those outside the region. Officials in the Chinese Ministry of Commerce are in earnest about it, they say, even if the process of negotiation is likely to be protracted. China may try to secure carve-outs from the club's rules. Meanwhile, the possibility of Chinese membership will exert a strong pull for many in the region and beyond. Research by Peter Petri of Brandeis International Business School and Michael Plummer of Johns Hopkins University finds that if China joined CPTPP, global annual income gains due to the pact would quadruple to $632bn, or a quarter more than under the original TPP with America involved.

China's bid is already testing the group's cohesion. Any decision on new members must be unanimous. "China is trying a divide and conquer strategy, obviously," Ms Munakata says. Among and within CPTPP member countries, there are different schools of thought on how to proceed. Some argue it is better to let China have a hearing, and, ultimately, join if it meets the standards. "It's in Singapore's interests to have China in the TPP—it creates a more stable and predictable environment for trade in goods and services, particularly in intellectual property," says George Yeo, a former Singaporean trade minister. Others, especially Japan, are less keen and aim to hold off on even allowing its initial accession process to commence.

Whether or not China's bid proves successful, it has already been effective at complicating Taiwan's. (Some experts believe this was China's primary aim.) The island, which China claims as its territory, submitted its bid less than a week after China. Taiwan's government has been updating its regulations to meet the pact's standards. If Taiwan joined first, China would be livid. "The crux of the matter isn't Taiwan's ability to fulfil the standards—it's about how you deal with the concerns of many countries in the region about China's reaction," Ms Solís says. But if China joined first, it could block Taiwan. Joint accession, after the model of their WTO entry in 2001-02, might be a solution; but today's politics are less amenable to it.

A drawn-out process on China and Taiwan's bids could become a distraction, slowing much-needed updates of the pact's provisions to keep up with technological change. It could also clog up the entry queue. In addition to Asian aspirants, a trio of Latin American countries—Costa Rica, Ecuador, and, as of last December, Uruguay—have applied to join. Despite delays, South Korea is keen; its formal application is a "matter of time", says Yeo Han-koo, a former South Korean trade minister.

Can't count on Uncle Sam

Some in Asia dare to hope that the interest from other suitors will draw America back. Japan's prime minister, Kishida Fumio, has repeatedly called on Mr Biden to rejoin the CPTPP. It is extremely unlikely. Yet it is not entirely implausible, say two pioneers of a strategy to use smaller trade pacts to pull America into the region: Mr Yeo, the former Singaporean official, and Tim Groser, a former New Zealand trade minister. "Chinese interest will eventually spur the US to become interested again," says Mr Yeo. Though the CPTPP remains electoral poison in Washington, Mr Groser points to the USMCA agreed in 2018 as a model for a shift.

Certainly, Mr Biden's current economic offering, the Indo-Pacific Economic Framework, which pointedly lacks any element of trade liberalisation or expanded market access, leaves much to be desired for export-oriented Asian economies. If America, the world's largest import market, fails to understand that, many in the Indo-Pacific may start to feel pulled ever more towards China, the second-largest. ■

Asian media

Gay dramas for straight women

TOKYO

Will Thailand’s Boys’ Love shows be the next K-pop?

THE “2GETHER CAFE”, a pop-up restaurant on the second floor of the Tower Records Shibuya building in Tokyo, is a hub for a new Asian craze. Visitors, all women, swoon over wall-to-wall pictures of Bright Vachirawit and Win Metawin, stars of “2gether: The Series”, a Thai TV drama about two students who fall in love. The actors, both men, are depicted exchanging flirtatious glances and hugging. Airy Thai pop music plays in the background. “I didn’t know Thailand had such handsome men,” says Kobayashi Maki. An ardent fan of the TV series, she is studying Thai because of it.

Thai soap operas about gay romance, generically known as “Boys’ Love” (BL) or sometimes “Y series”, are stealing hearts across Asia. Though the first shows appeared in 2014, the genre, including over a hundred series to date, took off outside Thailand during covid-19 lockdowns, thanks in part to many being available on YouTube. In Japan, a key market, the hashtag *Thai numa* or “Thai swamp”—a reference to the shows’ addictiveness—is popular on social media. Thailand promotes BL content at international trade shows. In June 2021 the industry secured 360m baht ($10.4m) in foreign investment.

BL originated as a Japanese manga storyline, which became popular in the 1990s. It has always been mainly consumed by straight women, just as the Thai televised version is. “I get to see two handsome men together. It’s a feast for my eyes!” says Takabayashi Otoha, a 20-year-old Japanese fan. Rujirat Ishikawa, a Thai academic at Aoyama Gakuin University in Tokyo, says some women find it liberating to watch romance as a sexual “outsider”, with no female protagonist to make them feel jealous.

For the shows’ Thai producers, the global success of another group of delicately featured young men—South Korea’s K-pop stars—was another inspiration. They have copied elements of the K-pop business model, including heavy use of “fan services” such as meet-and-greet events to boost revenues. Poowin Bunyavejchewin of Thammasat University in Bangkok calls Thai BL a “melting pot” that mixes “the Japanese ingredient and Korean ingredient”.

Thai BL’s success has also started to attract more gay viewers. A recent survey suggested that more than 20% of the TV shows’ fans in Thailand are gay. That may be in part thanks to a growing number of storylines about the discrimination they face, notwithstanding Bangkok’s reputation as a gay mecca. The shows’ success is itself a rebuke to that chauvinism. “These days, you see BL couples featured on big advertisements in public. That used to be unthinkable,” says Mr Bunyavejchewin.

This puts the Thai government in a slightly awkward position. While embracing the BL shows’ potential to burnish Thailand’s soft power, it tends to play down their gay content when promoting them; it is also opposed to same-sex marriage. Back in 2007 the government briefly banned BL comics under obscenity laws. The production companies will be wary of provoking another backlash. “If they go too far, they might get crushed,” warns Ms Ishikawa. In Thailand, Boys’ Love is in, gay rights not so much. ■

East Asian relations

Litigating history

SEOUL AND TOKYO

South Korea announces a plan to end its forced-labour feud with Japan

YANG GEUM-DEOK, a child of 1940s Korea, dreamed of being a teacher. When her head teacher suggested she should study in Japan, the country’s colonial ruler, she enthusiastically agreed. Aged only 13, she forged the necessary documents and left her home in South Jeolla province. She was promptly dispatched not to the promised school in Japan, but to an aeroplane factory run by Mitsubishi, a Japanese conglomerate. “I was worked almost to death and never paid,” she recalls. Her last hope, she says, is that “the offenders will offer a sincere apology before I die”.

윤석열 정부
굴욕외교
OUT!

Yang Geum-deok wants her apology

She may at least be offered some hard cash. On March 6th the government of Yoon Suk-yeol, South Korea’s president, announced a new compensation fund for victims of Japanese wartime forced labour or their surviving relatives. The details—including, crucially, whether Mitsubishi or any Japanese firm will pay into it—are unclear. Yet Mr Yoon hopes this will end a dispute that has for decades poisoned the two countries’ relations, even as American pressure and worries about China and North Korea draw them closer. Joe Biden, America’s president, hailed the announcement as “a groundbreaking new chapter of co-operation and partnership”.

It follows a ruling by South Korea’s Supreme Court, in 2018, that two Japanese companies, Nippon Steel and Mitsubishi Heavy Industries, must compensate South Koreans, or their surviving relatives, who were forced to work in their factories. Japan’s government objected, saying the issue had been settled by a treaty between the two countries in 1965. A stand-off ensued, raising the prospect that Japanese firms such as Mitsubishi would have their South Korean assets seized by the court. Since Mr Yoon came to power last May, officials in Seoul and Tokyo have been engaged in a closed-door effort to patch things up.

The compensation fund will be filled mostly or entirely by South Korea’s government. South Korean companies that received money under the 1965 treaty (which included $800m in grants and low-interest loans to South Korea) will be encouraged but not forced to contribute. Japanese firms may do so on a voluntary basis. Meanwhile Japan’s government, instead of issuing a fresh apology, will reissue the “deep remorse and heartfelt apology” it offered in 1998 for the “tremendous damage and suffering” caused by the Japanese colonial occupation of Korea in 1910-45.

The formula reflects how little Kishida Fumio, Japan’s prime minister, felt able to compromise. He fears upsetting the right of his Liberal Democratic Party, which is against any new apology. Mr Kishida hailed the fund as a “return to a healthy relationship”. Within hours, Japan’s trade ministry announced bilateral talks on lifting controls, in place since 2019, on exports to South Korea of materials for semiconductor manufacturing. (South Korea said it would suspend a related complaint that it had lodged with the World Trade Organisation.) On March 9th the two countries announced that Mr Yoon would make an official visit to Japan the following week. He may also be welcomed as a guest at the G7 summit in Hiroshima in May.

The South Korean leader still has to sell his fix domestically. His push for better bilateral relations rests on an appeal to South ▸▸

Koreans to weigh the benefits of co-operating with Japan against their grievance over its past abuses. In a speech on March 1st, a day that commemorates Korean independence, Mr Yoon said Japan had transformed itself from a “militaristic aggressor of the past into a partner that shares the same universal values”. But he may fail to placate either the victims of Japanese forced labour or his political opponents.

Lim Jae-sung, a lawyer acting for 15 plaintiffs in relation to Nippon Steel’s use of forced labour, argues that, for the fund to work as hoped, each will have to renounce his or her claim to compensation from the Japanese firm. And some of them, he suggested, will insist that Nippon Steel must itself apologise and pay up. “How will we be able to accept this when there is not one apology, not one yen?” he asks.

Most South Koreans want better relations with Japan. Yet a recent poll suggests 64% consider a further apology from Japan and an investigation into its past wrongdoing to be prerequisites. And Mr Yoon’s opponents will inflame that feeling. Lee Jae-myung, the leader of the opposition party, has accused the government of “treating forced-labour victims as if they are a stumbling-block to the improvement of relations”. Much the same charge helped undo a “final and irreversible resolution” of the issue of Korean women forced into wartime sexual slavery by Japan, negotiated by the two countries in 2015.

As dusk fell on March 6th, protesters against the deal gathered outside Seoul’s city hall. Candlelit signs decried Mr Yoon’s “humiliating pro-Japanese diplomacy” and America’s support for it. The big question is whether Mr Yoon has done more to soothe the anger, or to stoke it. ■

Banyan Legacy issues

A row over Lee Kuan Yew’s house shines a light on Singaporean power politics

WHEN LEE KUAN YEW died in 2015, many recalled how he reacted to the idea that a monument should be raised to him. “Remember Ozymandias!” Singapore’s founding prime minister had said, referring to Shelley’s sonnet about a great pharaoh memorialised, in the end, only by a broken statue in a desert. Lee wanted no monument apart from a thriving Singapore.

He tried hard, even from beyond the grave, to preclude the establishment of one potential memorial in particular: the colonial-era bungalow at 38 Oxley Road where he had lived from 1945 until his death. Lee left instructions for it to be bulldozed. Instead, the house, still very much standing, has become the focus of a bitter dispute between his three children. One of them, Lee Hsien Loong, has been Singapore’s prime minister since 2004; another, his daughter Lee Wei Ling, in ill health, lives in the house; the third, their brother Lee Hsien Yang, is being investigated for perjury over the row and has fled the country.

The squabble has gripped Singaporeans, and no wonder. It is hard to think of a better allegory for the island-state’s power politics and economic development than an intra-Lee family dispute over a British-era property. The disagreement centres on the handling of Lee Kuan Yew’s will, the last of seven iterations. Signed in December 2013, it was handled not by his usual solicitor but by his daughter-in-law, Lee Hsien Yang’s wife Lee Suet Fern, and her law firm. Like most earlier drafts, it contained what has become known as “the demolition clause”, instructing that the house should be demolished either immediately after Lee’s death or, if Lee Wei Ling still wanted to live in it, as soon as she had moved out. Singapore’s founding father must have felt strongly about this—it was the one clause in his will he wanted made public. His elder son, the current prime minister, once described him as “unwavering” on the issue.

In 2017 a family dispute over the house’s fate became public when Lee Hsien Yang and Lee Wei Ling issued a long statement accusing their brother, the prime minister, of being “behind what was represented to the family as a government initiative to preserve the house”. The rift has since widened. Lee Suet Fern’s role in the execution of the final will was officially investigated and in 2020 she was suspended as a lawyer for 15 months—even though she was not found to have acted dishonestly in her dealings with her father-in-law. Her husband, Lee Hsien Yang, joined the political opposition, campaigning for the small Progress Singapore Party at a general election that year.

The couple, now living in exile, were on a trip to Singapore last June when they were visited early one morning by two senior policemen. Rather than report for a formal police interview as requested, they promptly rushed to the airport. These events were made public only on March 2nd in a senior minister’s written answer to a parliamentary question about the house controversy. He said the couple were under investigation for having given false evidence in the proceedings against Lee Suet Fern.

Lee Hsien Yang believes this revelation was intended to thwart his ambition. Singapore will hold a presidential election between June and October, and he has hinted at running. The presidency is a largely ceremonial role, but has important veto powers. And Lee Hsien Yang had been a plausible contender. The office, held in six-year terms, is rotated around Singapore’s biggest ethnic communities. This year’s contest will be “open”—meaning that candidates from the ethnic-Chinese majority, to which the Lee family belongs, can stand. Lee Hsien Yang is also one of the few people who could meet the strict criteria for candidates from the private sector, having been chief executive of Singapore Telecommunications for 12 years.

A big believer in both meritocracy and the power of heredity, Lee Kuan Yew would not be perturbed that a son of his should occupy his former office. He might even have taken in stride another son running for president as, in effect, an opposition candidate. But that now seems unlikely to happen. It could not be done from exile.

Even were Lee Hsien Yang to run, Lee Hsien Loong, like his father, loses few political battles. A son of Lee Hsien Yang and Lee Suet Fern, the Harvard economist Li Shengwu, acknowledged his uncle’s clout in a tweet. “Many families have vindictive relatives. My relatives just happen to control a small authoritarian government.”

The National People’s Congress

Wolf worriers

Tough language from Xi Jinping and his underlings belies their anxiety

CHINA’S ALL-OUT struggle to crush covid-19 is now over, but its leaders still see a world fraught with peril. During the annual session of the country’s parliament, which began on March 5th, Chinese officials have been airing their worries. President Xi Jinping pointed his finger at America, accusing it of leading Western countries in a campaign of “all-out containment, encirclement and suppression” against China. The outgoing prime minister, Li Keqiang, said such threats were escalating. He set an unexpectedly cautious target for China’s economic growth this year (see next story). Their message is clear: China’s post-covid reopening to the world could be a bumpy one.

Mr Xi is China’s worrier-in-chief. A handy 251-page book, published by the Communist Party in 2020, contains nothing but anxiety-related snippets from his speeches. They cover every topic from terrorism and “colour revolutions” to the “middle-income trap”—that is, stalling growth. The extracts are peppered with metaphors: lurking tigers, boulders on the road, terrifying waves and stormy seas. One bit comes from remarks to domestic security chiefs in 2014, just over a year after Mr Xi became China’s leader. It shows how long-standing his current worries are: “Western countries such as America increasingly feel fishbones in their throats and blade-tips in their backs, so are stepping up their strategy of Westernising and splitting our country.”

Usually Mr Xi avoids explicit criticism of America at public-facing occasions such as meetings of the National People’s Congress (NPC), as the legislature is known. His break from custom this time, at a meeting on March 6th with advisers to the NPC, suggests anxiety levels are growing. He said American-led efforts at containing China had presented “unprecedented severe challenges” to the country’s development. At an NPC-organised news conference, his new foreign minister, Qin Gang (known for his feisty language, no matter the context), was even more forthright: “If the United States does not hit the brake but continues to speed down the wrong path, no amount of guardrails can prevent derailing, and there will surely be conflict and confrontation.”

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For all such rhetoric, however, Chinese officials have avoided using the NPC, and the parallel meeting of its advisory body, to make any explicit threats against America. On Taiwan, the most contentious issue in the bilateral relationship, they have stuck to ambiguous language. In his farewell speech to the NPC, Mr Li said the armed forces should “intensify military training and preparedness across the board”. China’s defence spending is higher than it admits. But a draft budget said it should grow by 7.2% this year. That would leave its share of GDP largely unchanged, once inflation is taken into account. And Mr Li said China should “promote the peaceful development of cross-strait relations”.

It may be that, for all their disquiet, Chinese leaders do not want to escalate tensions with the West, nor narrow their room for manoeuvre. Mr Xi said officials should “dare to struggle”, but he also called for calm (using the word three times) in the face of "profound and complex changes in the international and domestic environments". By emphasising threats from the West, such as America's efforts to limit Chinese access to cutting-edge technologies, it is possible that China hopes to focus attention at home on the need for greater industrial self-reliance. On March 10th the nearly 3,000 delegates are due to vote on (ie, rubber-stamp) a plan for restructuring some government ministries. This is expected to give the party more control over vital areas of work, including technological development (see Chaguan). A senior official said one reason for the shake-up was "the severe situation of…external containment and suppression".

Such a response is typical of Mr Xi. His book of worries, titled "Excerpts from Xi Jinping's Talks on Guarding Against Risks and Challenges and Responding to Emergencies" (a snip at $7.50), is replete with recommendations that the party tighten its grip. But at the same time, Mr Xi and his officials have been using the NPC, which ends on March 13th, to send reassuring signals to entrepreneurs who have been spooked by the party's growing muscularity in the economic domain. To revive growth, which was 3% last year, the second-lowest rate since the death of Mao Zedong in 1976, private firms will be crucial. They contribute three-fifths of GDP.

"In the coming period," said Mr Xi, echoing the prime minister, "the risks and challenges we face will only increase and become more severe." He then heaped praise on the private economy, calling it an "important force for long-term rule by our party" and describing entrepreneurs as "our own people". Businesspeople will be cautious, however. These are phrases he has used before. There may have been a sigh of relief among some company bosses that Mr Li did not mention the term "common prosperity" in his speech to the NPC. The slogan, favoured by Mr Xi, is associated in some people's minds with heavy-handed treatment by the party of billionaires and their firms. But in his meeting with the NPC's advisers, Mr Xi used the phrase four times.

The new guys

Many businesspeople will wonder whether to take solace from several high-level appointments that will be unveiled at the NPC (aside from the inevitable reconfirmation of Mr Xi as president, which will be announced on March 10th). The most important will be the naming of a new prime minister on March 11th. It is almost certain to be Li Qiang, a former party chief of Shanghai and protégé of Mr Xi.

Mr Li is an intriguing figure. He is disliked by many in Shanghai for overseeing a draconian two-month lockdown of the city last year to stop the spread of covid. Businesspeople tend to have a higher opinion of him. High-level politics in China is a black box. But Reuters, a news agency, said that Mr Li was behind the sudden ending of the "zero-covid" policy in December. As the newly appointed head of a covid taskforce, Mr Li "resisted pressure from the president to slow the pace of reopening", Reuters reported.

Also closely watched will be people chosen to work under Mr Li on economic matters. Many of those slated for top posts have far less experience of the West than their predecessors. But Mr Xi may reckon that matters less now, with the West ganging up against him. ■

The economy

Credibility over confidence

HONG KONG

Interpreting China's unambitious growth target

WHEN CHINA'S government sets its economic growth target for the year, it often faces a dilemma. A balance must be struck between inspiring confidence and maintaining credibility. A high target could give courage to entrepreneurs, making fast growth easier to achieve. But ambitious targets can also be missed, denting the government's reputation. (They can also induce reckless stimulus spending to avert any such embarrassment.)

Last year the government missed its target by a wide margin (see chart on next page), largely owing to its costly attempt to keep covid-19 at bay. This year it has prized credibility over confidence. On March 5th Li Keqiang, China's outgoing prime minister, opened the National People's Congress, China's rubber-stamp parliament, with his annual "work report". It revealed a growth target of "around 5%" in 2023.

That may seem like a respectable pace, roughly in line with China's underlying "trend" rate of growth. But the economy would normally be expected to exceed that trend comfortably this year, because it fell so far short of it last year. The target is lower than many external forecasts. Even if it is met, China's GDP will remain more than 2% below the path it was supposedly on before the Omicron variant arrived last year.

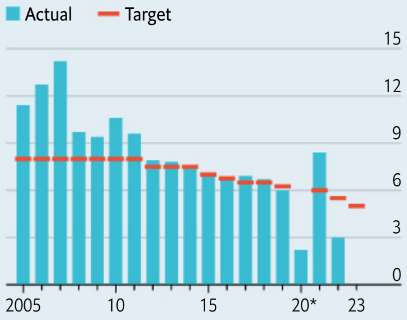
The government reckons that China must create about 12m new urban jobs this year. This target is more demanding than last year's (12m versus "over 11m") even though the growth target is less so. The government may be hoping that China will enjoy an unusually "job-full" recovery, as labour-intensive service industries, like retail and catering, bounce back from the pandemic-era restrictions that hit them particularly hard. It also wants employment to keep pace with the record 11.58m students who are expected to graduate from universities and colleges in 2023.

The undemanding growth target removes any pressure to stimulate the economy further. Compared with last year, Mr Li's report contained fewer exhortations to local governments to keep the economy going. He instead pointed out the need to prevent a build-up of new debts. "The budgetary imbalances of some local governments are substantial," he noted. This year they will be allowed to issue 3.8trn-yuan ($550bn) worth of "special" bonds (which are supposed to finance revenue-generating infrastructure projects). On paper, that quota is a little higher than last year. But it

Go forth and spend

Eye on the target

China, GDP, % increase on a year earlier



Source: Haver Analytics *No target set

may not feel like it in practice, because local-government spending last year was bolstered by an unusually large stash of bond proceeds carried over from 2021.

The report's conservatism is in keeping with a theme of this year's congress: China's rulers tightening their grip over the state. President Xi Jinping's new economic team will feature trusted aides and acolytes. Li Qiang, the party's number two, is expected to replace Li Keqiang as prime minister. He Lifeng, who worked with Mr Xi in Fujian (and attended his second wedding), is likely to become a deputy prime minister in charge of economic policy. He may also serve as party chief of the central bank. If so, he will oversee a new governor of the bank, who is likely to be Zhu Hexin, a commercial banker who served as vice-governor of the province of Sichuan.

Mr Li's report offered little guidance on what closer control would mean in practice. Like previous editions, the document is a combination of theological boilerplate ("hold high the great banner of socialism with Chinese characteristics"), policy bromides ("we should enhance the intensity and effectiveness of our proactive fiscal policy") and technocratic factoids (China increased the length of expressways by 30% and drainage pipelines by more than 40% over the past five years).

The most striking novelty in this year's report was its nostalgia. Last year's edition turned from past to present by the eighth page (of the English translation). This year Mr Li did not leave the past behind until the 31st page and then spared only four pages to discuss priorities for 2023. Perhaps he found it hard to talk about the future, given that he will have no role in shaping it. ■

We are seeking interns to write about foreign affairs for *The Economist*. The internships will be London-based and paid. Anyone is welcome to apply, regardless of citizenship or any characteristic unrelated to the job. An interest in economics is helpful although not essential. Applicants should send an unpublished article of 600 words suitable for publication in *The Economist*, a cv and a cover letter to foreignintern@economist.com. The deadline is March 31st, 2023.

Foreign education

Learning skills, not values

BEIJING

Many top politicians studied in the West. It did not endear them to it

IN THE EARLY 20th century thousands of Chinese Communist Party members went to Russia to learn how to stage a revolution and build a socialist state. The Russians, in turn, hoped the study programmes would give them lasting influence over their Chinese comrades, many of whom would rise to positions of great power. But within a decade of becoming communist, China began squabbling with the Soviet Union. In 1961 leaders in Beijing denounced Soviet communism as the work of "revisionist traitors".

The episode holds sobering lessons for Western countries, which have hosted millions of Chinese students over the past four decades—many of whom have risen to positions of great power. While universities raked in cash, Western leaders hoped the experience would endear future Chinese leaders to liberal values. But, as with the Russians, they have been disappointed. Today the party is more anti-Western than it has been in decades, a mood reflected in the words of President Xi Jinping and Qin Gang, the foreign minister, at a meeting of the National People's Congress this month.

Foreign-educated students who return to China are known as *haigui* (sea turtles), a homophone for "returning home from abroad". For a long time those who entered China's bureaucracy found themselves swimming upstream. While their technical knowledge was valued, the party feared that they might have divided loyalties. But as the number of *haigui* swelled, the distrust faded.

UsaStudy
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经验

Liberal or leader, his options are open

Today over 20% of Central Committee members—the 370 most powerful party officials in China—have had some foreign education, mostly at Western universities. That is up from 6% two decades ago, according to Cheng Li of the Brookings Institution, a think-tank in Washington. Eight of the 24 members of the Politburo have studied in Western countries, the most ever by far.

Like many overseas Chinese students today, the leaders often focused on STEM subjects (science, technology, engineering and mathematics). A Politburo member called Chen Jining, who is the party boss of Shanghai, spent a decade in Britain studying engineering. Another member, Yuan Jiajun, studied at Germany's centre for aerospace research. He later ran the rocket programme that sent the first Chinese man into space.

But there was demand for other subjects, too. In 2002 Harvard University's Kennedy School of Government, working with Chinese institutions, set up a three-month programme to teach mid-ranking Chinese officials about administration. Similar short-term programmes sprang up at universities elsewhere in America and the West. (Some, such as Harvard's, were later shut down.)

Despite all this, an anti-Western spirit permeates the leadership. State directives rage against "erroneous" Western ideas, such as having an independent judiciary. Students in China's schools are warned not to be misled by foreign concepts. In February a teacher in Anhui province was denounced by a student for "worshipping the West and pandering to foreign powers" after he encouraged students to study abroad. Never mind that China's education minister, Huai Jinpeng, was a visiting scholar at America's Columbia University in the 1990s.

President Xi Jinping studied only in China. But his ideological tsar, Wang Huning, was a visiting scholar in America in 1988. He wrote a book about his experience which revealed admiration for some aspects of the country, such as the way presidents reliably leave office when their term ends (Mr Xi will soon be confirmed for a norm-busting third term). But, Mr Wang wrote, there were "undercurrents of crisis" caused by racial tensions, disintegrating families and poor education. For him, America mostly offered a lesson in what to avoid.

Chaguan | What party control means

The Communist Party is grabbing powers from government offices and experts. That is worrying

THE WORKINGS of Chinese power are not easy for outsiders to follow. Visitors to some official buildings, for example, are greeted by two vertical signboards, one bearing black characters, the other red. The black-lettered sign denotes a government department. Red characters signal an organ of the Communist Party. In bureaucratic slang this is known as "party and government on one shoulder-pole". Sometimes the two offices oversee the same policy area, and employ some of the same officials. They are not equally transparent. Especially when meeting foreigners, officials may present name cards bearing government titles but stay quiet about party positions which may or may not outrank their state jobs. Many party branches are not publicly marked at all.

It is a good moment to remember this quirk of Chinese governance. The annual session of the National People's Congress (NPC), the country's largely ceremonial legislature, is under way from March 5th to 13th. This year's NPC meeting comes after a big party congress last October. At that gathering China's supreme leader, President Xi Jinping, secured a norm-trampling third term and filled his party's highest ranks with loyal aides. Now Mr Xi's new team has made headlines with a bureaucratic shake-up that takes powers from several government ministries and agencies, including bodies charged with making China self-reliant in high-technology and with regulating data and financial markets. Many of those powers will now be wielded by party-led commissions.

NPC delegates applauded the changes in their marble-pillared, crystal-chandeliered simulacrum of a parliament, for they know the drill. Soon they will rubber-stamp Mr Xi's latest move to impose the party's will, meaning his own, on China's vast bureaucracy. When they do, outsiders are entitled to recall those black and red signboards and ask an innocent question: in a country where government and party office-holders may share the same building—and may even be the same people—what does it actually mean for the state to cede power to the party?

In China's opaque political system, one way to understand a new policy is to study old ideas that it repudiates. Mr Xi's power grab challenges lessons that his predecessors drew from Chairman Mao Zedong's chaotic rule, when loyalty to the leader and ideological fervour took precedence over good government. In the years after Mao's death in 1976, economic reformers moved to separate party and state. They sought to free enterprises from the stifling hand of central planners, and to liberate farmers and factory managers from micromanagement by party committees. They took political cover from the paramount leader, Deng Xiaoping, who—though no liberal politically—gave public warning that "over-concentration of power is liable to give rise to arbitrary rule by individuals." By the late 1980s, reformers were promoting the notion of a "vanguard party", a smaller, nimbler party whose role was to set an overall ideological line, not "try to control everything", recalls Professor Anthony Saich of Harvard University, who interviewed reformist officials in China in those years.

Over time more power was decentralised to local governments, whose officials were rewarded for presiding over rapid growth. In the late 1990s, when entrepreneurs could no longer be ignored, the party moved to co-opt them, admitting businesspeople as members. Then came Mr Xi. Soon after becoming leader in 2012, he declared the Communist Party dangerously corrupted by money and distant from the everyday lives of the masses. He has spent the past decade reasserting the party's authority over every aspect of public life. This week Mr Xi declared that entrepreneurs need more "theoretical and political guidance" to understand their obligations to the party and country.

Mr Xi talks of the party's almost 97m members as if they are missionaries in an atheist church, stressing their self-sacrificing "red spirit" and paying homage to "martyrs" who died for the revolution or in the people's service. That faith-tinged language is usefully clarifying. Most senior officials, whether in a ministry, mayor's office, state-owned enterprise or university, are party members. One way to think of them is as lay believers, with varying degrees of faith. Then there are party cadres whose careers take them from the party committee of a town, say, to a post as party secretary of a county or other public institution. They are more like priests, with lives dominated by doctrine, discipline and secrecy.

When ideology trumps expertise

Jing Qian of the Asia Society Policy Institute, a think-tank based in New York, describes some important differences between state and party offices. China's government bodies are subject to (some) institutional and legal constraints. Party bodies are self-policing and their powers are limited only by the party constitution. He contrasts the professionalism of technocrats with the political incentives that guide party cadres. By way of example, he imagines an official with 20 years' experience at the People's Bank of China debating policy with a party cadre on a short posting to the central bank. Perhaps the banker urges caution in the name of financial stability. But the party cadre wants to please political superiors and earn a promotion. So the technocrat is overruled.

China's "zero-covid" campaign offers real-world evidence of professional judgments trumped by politics. Once the Omicron variant arrived in 2022, some prominent scientists called for greatly increased efforts to vaccinate old and vulnerable citizens and stockpile antiviral drugs. But Mr Xi had declared that lockdowns and quarantines could defeat the virus, so suggesting ways to co-exist with covid-19 was heresy. Experts fell silent or were sidelined. As a result, when zero-covid collapsed last December, the country was unprepared. After concealing many covid deaths, China's rulers now call their pandemic controls "a miracle in human history". All governments make mistakes. What matters is whether they learn from them. Mr Xi's record is not reassuring. ■

Middle East & Africa

Arab bureaucracies

The incredible shrinking state

CAIRO AND DUBAI

Arab states have cut back on hiring, but their wage bills are still enormous

DRIVING AN UBER was never part of Karim's plan. His father had a comfortable job at Egypt's national-statistics agency. His grandfather was a civil servant too, hired during the large expansion of the public sector in the era of Gamal Abdel Nasser. Five years ago, armed with his accounting degree from Cairo University, Karim set out in search of his own sinecure doing sums for the state.

He never found it. Public hiring has slowed, especially for graduates. "I could have been a cleaner with an accounting degree, but not an accountant," he quips. Nor is there much work in the private sector, which has shrunk almost every month since he left university. That leaves odd jobs: ride-hailing apps and shifts at a café.

His story is becoming a common one across a region once characterised by enormous public sectors. Many citizens saw make-work jobs in the civil service as a birthright. Sluggish state-run firms, which often ran at a loss, added more fat to the public payroll. Wage bills consumed a big chunk of revenue, leaving little to spend on health, education or capital investments.

This is starting to change. As a percentage of total employment, the public sector is shrinking in many Arab countries. About 20% of working Egyptians were employed by the government in 2021, down from 27% a decade ago, reckons the International Labour Organisation. The absolute number of civil servants has dropped as well. These figures are still high. In the OECD, a club of rich countries, the average share of public employment is 18%. Still, the proportion is falling—not only in Egypt, but in Jordan, Saudi Arabia and other Arab countries.

Relatively high wage bills still put pressure on budgets. The IMF estimated in 2016 that the wage bill absorbs around 20% of public spending in rich countries and 30% in poor ones. In most Arab countries it is above 40% (see chart on next page).

The public sector should provide good services to citizens. It can also help expand the middle class and reduce income inequality, as it did in mid-century Egypt, or serve as an effective (if expensive) way to hoover up lots of unemployed young people. In much of the Arab world, it does none of these things: states are spending lots of money and getting ever less for it.

For decades the Saudi civil service grew steadily, adding around 20,000 citizens annually. Hiring surged during the mid-2000s' oil boom: from 2005 to 2015 the state laid on almost half a million workers. Then it stopped. Since 2016 the number of governmental employees has grown by just 2%, according to central-bank data. As more Saudis take private-sector jobs, the share of public employment has fallen from around 70% in 2016 to 52% in 2022.

Less hiring will slow the growth of the wage bill—but not reduce it. Total salaries climbed from 409bn rials ($109bn) in 2016 to an estimated 506bn rials last year, a 24% increase during a period when cumulative inflation was less than 9%. Salaries were budgeted to absorb 58% of public spending in 2022, unchanged from six years earlier.

Even as the number of public employ-

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ees in Egypt decreased, the wage bill more than doubled from 199bn pounds ($28bn then) in 2014 to 400bn pounds last year. When Abdel-Fattah al-Sisi took power in 2014, after a military coup, the public-sector minimum wage was 1,200 pounds. He has raised it five times. The latest increase, to 3,500 pounds, takes effect on April 1st.

Honey, I shrunk the state

Mr Sisi's government, which finalised a $3bn IMF loan in December, insists it is making progress towards shrinking the public-wage bill. Officials point out that salaries have fallen from 27% of expenses in 2014 to 20% last year. But those numbers need a caveat. Egypt loaded up on debt during that time. The annual cost of servicing it has increased by 360%.

Strip out interest payments, and the budget looks less impressive: wages ate up 38% of discretionary public spending last year, compared with 40% in 2014. Egypt devotes a smaller share of spending to welfare and public services today than it did nine years ago. Its citizens rail at the shoddy state of public schools and hospitals.

Even if governments wanted to fire lots of bureaucrats, civil-service rules make it difficult. And they do not want to—because it would be politically unpopular. Tunisia has offered to freeze state hiring to secure an IMF deal. But it will have to grapple for decades with the consequences of a hiring spree that nearly doubled the size of the public sector after the 2010 revolution against Zine el-Abidine Ben Ali, the country's former dictator.

In 2017, when hiring slowed, the wage bill was 15% of GDP. By 2020 it was 18%. In 2021 the cash-strapped state started delaying the wages of many employees.

Even when salaries have risen in nominal terms, civil servants often feel hard done by. In Egypt their raises have not kept pace with a devaluing currency: in dollar terms, a civil servant on the new minimum wage next month will take home 34% less than in 2014. And the absolute level of public-sector pay in Arab countries is typically low, sometimes barely enough to live on.

Jobs with the state are harder to find, and harder to live on—yet the public sector remains the employer of choice. In 2020 researchers at the Economic Research Forum (ERF), a think-tank, calculated Egypt's "reservation wage", the salary below which a worker will not accept a job. The median result for unemployed men was 2,500 pounds in the public sector, and 3,000 in the private sector. The gap was wider for women: 1,500 pounds for the public sector and 2,500 at a private business.

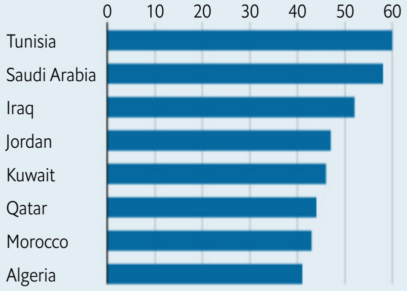
It is not hard to see why. Many roles still have better job security than in the private sector. Or take benefits. The ERF found that 95% of public-sector employees had paid sick leave and 96% received health insurance. In the private sector, those figures were 40% and 36%.

Governments probably cannot cut their way to a lower public-wage bill. Nor is it obviously the right policy: it would require firing lots of people at a time when many economies are sluggish. If they were more vibrant, they might draw civil servants away from stultifying sinecures. Until then, Arab bureaucracies will call to mind an old Jewish joke: "The food here is terrible—and the portions are too small." ■

Feeling bloated

Public spending on wages as % of total

Selected countries, 2022*



Source: IMF *Or latest available

Egypt's economy

Time's up—whatever the time is

CAIRO

Fiddling with the clocks while the economy burns

As winter draws to its dreary end, many Egyptians look forward to spring. But they are less keen on their parliament's recent approval of a law to bring back daylight saving time (DST) designed to ensure that darkness falls later in the day. It hopes that doing so will curb the country's electricity usage and free up natural gas for export, since it generates about 60% of Egypt's power. But Egyptians are rolling their eyes.

DST was first brought in as a fuel-saving measure in the second world war. Since then, Egypt's governments have chopped and changed. None has been able to determine definitively the nature of its effects on energy consumption. In 2014 President Abdel-Fattah al-Sisi confused matters still more by announcing that the clocks would change four times that year to ease the burden on those fasting during Ramadan. Egyptians had to resort to social media to ask the time. Some Red Sea hotels ignored the changes in favour of "resort time", thus creating a rival time zone.

In 2016, three days before clocks were to jump forward, the government abruptly said it would drop DST for good. EgyptAir's chairman complained that the short notice given would cost his company $2m through delays and missed connections. The International Air Transport Administration reportedly told Egypt's government to fork out $8m to cover the cost of changing flight schedules. Daylight saving went from being a mild annoyance to a bad national joke.

Under Mr Sisi natural-gas exports have almost quadrupled, but Egypt's energy needs have soared, too. Even if, as the government hopes, reviving daylight saving time reduces the country's energy usage and thus boosts gas exports, Egypt's economic woes are such that it would make little difference.

His moment in the sun

And recent studies suggest that in countries where summer days are long and mild an extra hour of daylight reduces energy usage only a tad. In hot countries like Egypt the yen for air-conditioners means that extending summer days may even be counter-productive.

Other energy-saving measures include dimming streetlights, ending the decorative illumination of government buildings, and capping air-conditioning in shopping centres at 25° C (77° Fahrenheit). In 2020 and 2021 the government restricted business opening hours. The motive behind this was variously cited as an attempt to reduce noise, to limit late-night crowds, or to slow the spread of covid-19, but it may also have been an attempt to cut energy costs. Whatever the truth, clock-changing edicts will not mend Egypt's ailing economy.

African urbanisation

Beyond the metropolis

KISUMU

The growth of Africa's towns and small cities is transforming the continent

IN 2012, WHEN Moses Aloo inherited a plot from his grandfather, his neighbourhood in Kisumu, western Kenya, had plenty of farmland. But over the past decade, as Kisumu has grown, Nyamasaria has become part of the city. Mr Aloo is building two houses on his land. He will rent them out, "hopefully to God-fearing people", for 8,000 Kenyan shillings ($62) each per month, more than twice the going rate five years ago. "Now it is urban," he says, "this is a prime area."

The city's growth has disrupted traditional ways. Jamlick Onchari, who rents a one-room house behind his small dairy in Nyamasaria, says that Kenyans who have moved from other parts of the country feel increasingly at home in the historic stronghold of the Luo ethnic group. "This mix-up thing," he says, "with people from different tribes...it speeds up development because when people live together they bring ideas together."

Mr Onchari puts his milky finger on why urbanisation matters. By bringing people and firms into close contact, cities make both more productive. Yet, even though urbanisation is enriching Africans, they are not benefiting as much as they could. The growth of African cities is idiosyncratic and inefficient. This is true not just of megacities such as Lagos and Kinshasa, but of towns and smaller cities, like Kisumu, that draw less attention but where most African urbanites live.

When the wave of independence began sweeping the continent in the 1950s, the vast majority of Africans lived in the countryside (see map). Today there are more city dwellers in Kenya than there were in all of Africa in 1950. As recently as 1990 just 31% of Africans lived in urban areas, according to Africapolis, a research project supported by the OECD, a group of mainly rich countries. (Its analysts define "urban" as areas with at least 10,000 people.) By 2015, the latest year for which Africapolis presents continent-wide data, half of Africans were city-dwellers. That share is forecast to rise to more than 70% by 2050.

Though megacities and their slums often get more attention, roughly 60% of the continent's urban population lived in towns and cities that had fewer than 1m inhabitants in 2015. Of the 20 cities in Africa with the fastest-growing populations from 2000 to 2020, only one is a capital city (Abuja in Nigeria) and just five have populations of more than 1m people, according to David Satterthwaite of the International Institute for Environment and Development, a British think-tank, which looked only at cities with 300,000-plus people.

Many of the burgeoning places are "second cities": regional economic and administrative hubs, such as Bunia and Kabinda in Congo, and Kuito in Angola. Others are satellite towns on the outskirts of major cities. Ruiru, home to 400,000 on the fringes of Nairobi, Kenya's capital, is the sixth-fastest-growing city in Africa. At the top of the list is Gwagwalada, a satellite town for Abuja.

These small cities have expanded from a combination of natural population growth (more births than deaths) and inflows of migrants from the countryside. Rural folk have been upping sticks for centuries: think of the Lancashire farmhand moving to a Manchester warehouse or the Chinese peasant getting a job in a factory.

But there is another source of African urbanisation, often overlooked. Call it the rise of small-town Africa. As villages expand, usually because of rural population growth, they turn into towns. The total number of towns and cities in Africa more than doubled from 3,319 in 1990 to 7,721 in 2015, according to Africapolis. In large part this reflects the emergence of small towns: the average population of these new urban areas was 22,000.

All parts of the world have cities of different shapes and sizes. But the rise of Africa's small towns is a reminder that African urbanisation is often subtly different. In Africa, rural-urban migration is important. But so too is the impact of natural population growth in urban and rural parts, causing cities to absorb villages and villages to turn into towns.

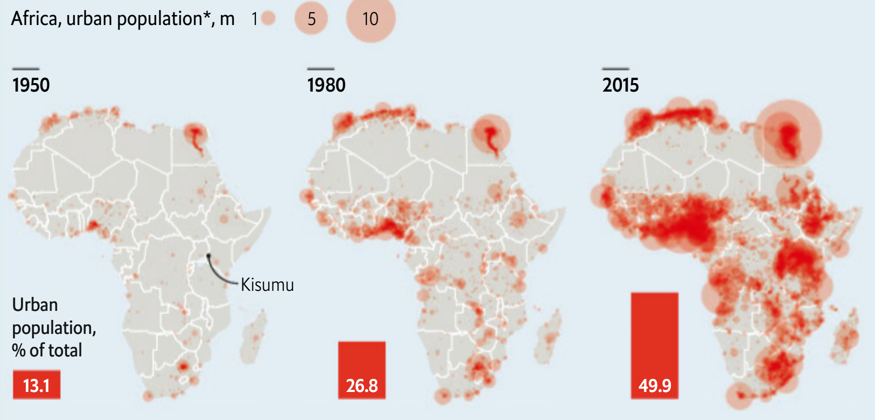
As towns and cities have become bigger and more numerous, urban areas have encroached on one another, forming what planners call "urban clusters". These often span more than one country. In 1960 the median distance between African cities was 84.3km; in 1990 it was 55.7km. By 2015 this had fallen to 27.3km (see chart on next page). The largest cluster in sub-Saharan Africa encompasses the Nigerian cities of Lagos and Ibadan, as well as Cotonou, the commercial capital of neighbouring Benin—and dozens of other small towns and cities. In total, Africapolis has identified 31 clusters in sub-Saharan Africa each of which has more than 2.5m city dwellers who live within 100km of each other.

We built this city

The rise of Africa's cities has generally been good for people. Wages in cities are about twice as high as they are in the countryside, reckons the OECD. And urbanites work 30% more hours per week than their country cousins. Small towns offer inhabitants some of the biggest potential gains. For a range of outcomes measured by the OECD, the benefits of moving from a village to an area of 50,000 people are more than those from going from a town of that size to a city of at least 1m.

And Africans need not even live in a city to enjoy the benefits of one. Today some 50% of rural Africans live within 14km of a city. This proximity means they can more easily gain access to the public and private services that cities offer. For instance, rural households living within 5km of a city are twice as likely to have a bank account as those 30km away.

The rise of small towns is blurring the distinction between rural and urban Africa. It is generally cheaper to live in small ▸▸



Gone to town

Africa, urban population*, m

Source: Africapolis

*Those living in settlements of 10,000 or more people towns than large cities, which allows families to rent a house in town while still being able to afford to keep a home in the countryside, where they can grow food. This is a form of insurance that reduces the risks of moving. Now that urban areas are closer by, with cheaper transport options (such as imported Chinese and Indian motor-cycles), more Africans can commute from villages, too. The daytime population of Kisumu is around 800,000; at night, that shrinks to 500,000, notes Peter Anyang' Nyong'o, its governor.

Urbanisation is good for Africa—but it could be so much better. Economists talk a great deal about the magic of agglomeration: how, as cities get bigger, the economies of scale and the spillover effects can lead to higher productivity. Yet, as the World Bank puts it, African cities are "too crowded, too disconnected and too costly" to make the most of this magic.

In a tired old street

About half of urban residents in sub-Saharan Africa live in slums. These settlements are often dense patches in otherwise sprawling cities. Whereas many cities in other parts of the world grow upwards, becoming denser over time, African ones tend to grow outwards. That is a problem because it is generally cheaper to provide water, power, transport and other infrastructure to compact cities than to sprawling ones. Denser cities and those with good transport links let more workers reach potential jobs, making labour markets more efficient by allowing better matching of skills and opportunities.

A World Bank report published in 2017 analysed the growth of 21 African cities in the first decade of the century. It found that between 46% and 77% of their growth came from expansion, rather than infilling existing areas. A related problem is "leap-frogging", whereby patches of land are left undeveloped and construction happens farther out. Another study, from 2016, looked at 265 cities in 70 countries and found that, after controlling for population size and GDP per person, African cities were more fragmented and their residents less likely to interact with each other.

The inefficiency of African cities compounds another problem: they are expensive. The World Bank reckons that living costs (food, housing, transport and so on) are about a fifth to a third higher in African cities than those in other developing countries. So long as firms must pay steep wages to cover steep living costs, that can make them less internationally competitive. In other parts of the world manufacturing has tended to rise sharply as a share of GDP as the rate of urbanisation approached 60%; in Africa it has broadly remained flat. The dominant "industries" in African cities are typically those that involve "non-tradable" services or construction, rather than export-oriented sectors. In Kisumu, Mr Nyong'o worries about the lack of formal jobs for young Kenyans. He says that many youngsters end up working informally. "They are moving to cities for jobs that don't exist," he says.

There are many reasons for Africa's sub-optimal urbanisation that have little to do with cities themselves. A low adult literacy rate impedes the transition to a more productive, industrialised economy. Low agricultural productivity keeps food prices in the cities high, which makes it harder for economies to shift from growing things to making them. The "resource curse" distorts both politics and economies.

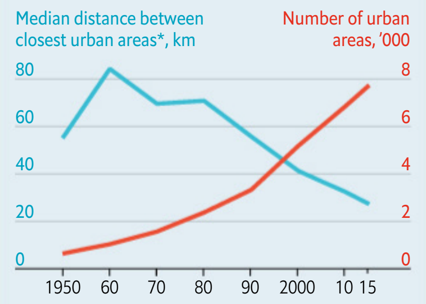
But some of the reasons relate directly to urban policy. Planning regulations, especially in former British territories, are outdated (the French were keener to impose compact cities). The minimum plot size in Dar es Salaam, Tanzania's commercial capital, is more than ten times that in Philadelphia, making it harder to get a cheap proper house. Restrictive zoning helps push people into informal areas on the outskirts. Few city governments tax land, leaving them short of revenue and with no way of benefiting from increased land values when they invest in infrastructure. Property taxes are just 0.5% of GDP in sub-Saharan Africa, versus 2% for OECD countries. Many countries have not updated property rolls for several decades.

In addition, the boundaries of local governments rarely match those of contemporary cities, making it hard for officials to plan. Accra, Ghana's capital, is spread across 30 districts. Far less spending is devolved to local governments in Africa than elsewhere. They are responsible for an average of 11% of investment by African governments. That is about half the global average and is lower than in other developing countries. Local bureaucrats toil in tough conditions. Just 6% of Nigerian local government employees have access to a computer.

But the main factor distorting African cities is that land and property markets are broken. The nub of this problem is a lack of clear property rights. Instead there is a patchwork of overlapping forms of land ownership—modern title deeds, traditional communal land, and informal "grey" claims. In Durban, South Africa's third-largest city, more than a third of land is jointly administered by a trust overseen by the Zulu royal family. In Ghana's Ashanti region the king operates a land registry parallel to the official registry office. In Kampala, Uganda's capital, where there are at least four different types of property rights, the productivity of a given area is linked to its type of tenure. As cities expand into rural areas, all of this becomes more complicated.

Making it there

Africa



Sources: OECD; UN; African Development Bank

*More than 10,000 residents

Many African countries have tried reforms. Hargeisa, the capital of Somaliland, an autonomous territory that wants to become an independent country, has a sophisticated property tax that allows the region to make up for a lack of funding from Mogadishu, Somalia's capital. Botswana regularised customary land rights in 2008. In 2019 Togo redrew the boundaries of Lomé, the capital, to recognise its expansion and that of satellite towns. Ghana, Morocco, Rwanda, Senegal and Uganda all have dedicated plans to develop second cities.

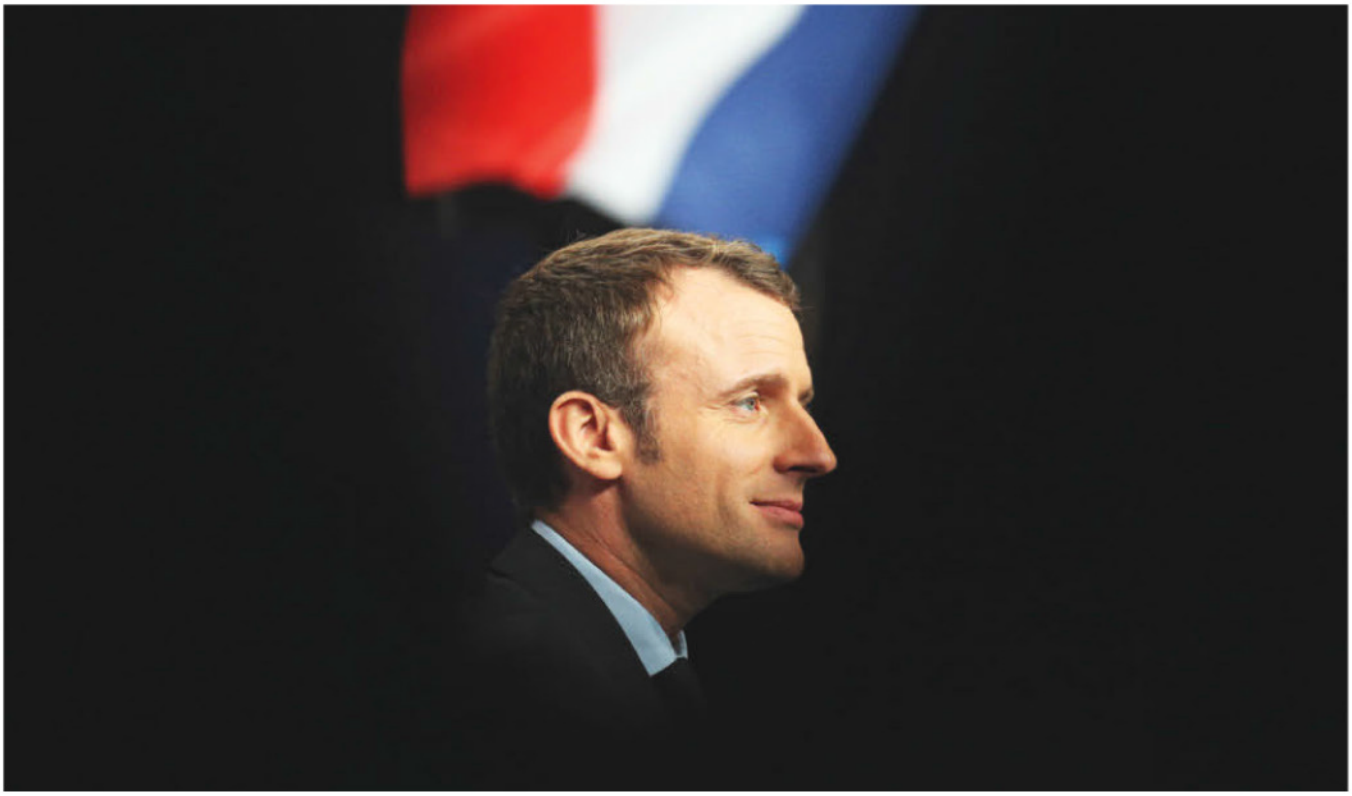
Yet not all are thought through. African politicians sometimes prefer to build flashy new—sometimes "smart"—cities, rather than fix old ones. Many projects do not survive a change of leader. Witness Yamoussoukro, Ivory Coast's neglected capital, home to one of the world's largest churches, a monument to God and the ego of Félix Houphouët-Boigny, the country's first president.

Someone stole the stage

The danger for Africa is path dependency: once cities grow in a certain, inefficient way, they can be hard to rebuild. Cheap materials and weak foundations mean it is impossible to add lots of floors to buildings in slums. Once informal settlements develop, they accrue vested interests that block their redevelopment.

Many cities that keep growing will eventually reach a point where the costs of growth outweigh the benefits. The risk in African cities is that, in the words of an OECD report published in 2022, "many cities appear to be arriving prematurely at this point."

"We are only waking up now to how Africa is not a rural continent any more," argues Astrid Haas, a Uganda-based urban scholar. She says that, as smaller cities grow, policymakers must learn from the mistakes made in metropolises. If they do not, they risk wasting the benefits of urbanisation that have driven growth in other parts of the world. "We only have a generation to get this right," she warns. ■



Macron and the world

Perpetual motion

PARIS

Emmanuel Macron's view of a more muscular Europe is coming true. But his allies disagree on strategies and goals

IT WAS A cautious but hopeful French president who took his seat in the beige-trimmed aircraft office, bound from Moscow to Kyiv on February 8th 2022. The previous night Emmanuel Macron had spent over five strikingly socially distanced hours seated opposite Vladimir Putin at a table the length of a shipping container.

Their exchange was tense, he recounted, but Mr Putin had vowed that Russia would "not be the cause of escalation". Two weeks later, Russian tanks rolled into Ukraine, sparking the biggest conflict in Europe since the second world war, and exposing the futility of Mr Macron's venture.

Across Europe, leaders are grappling with the fallout from Russia's war. In France, the conflict has shone a light on Mr Macron's ambition to keep his mid-sized country seated among the giants at the top diplomatic table—and the frustrations of trying to do so. In many ways Europe has come round to the French president's way of thinking. The continent is rearming, asserting itself and learning to speak the language of power. Yet on crucial questions, notably its future security, it is still not persuaded by Mr Macron's ideas.

No one could fault Mr Macron's work ethic. Constantly tapping out text messages to his peers, Mr Macron has this year already hosted 16 different world leaders in Paris. In April he is heading to China to see Xi Jinping. That will make him the first G7 leader to meet him this year (he is expected to urge Mr Xi to put pressure on Mr Putin over the Ukraine war). Last week he completed a four-country tour of Africa. On March 10th he will welcome Britain's government, and then its king on his first overseas visit as monarch.

He has levers of hard power possessed by no other member of the EU. Nuclear-armed, with a permanent seat at the United Nations Security Council, France maintains a big army with a global reach. Its military bases and overseas territories stretch from the Caribbean to the Pacific. With 264 embassies and missions, France runs the world's third-biggest diplomatic network after China (275) and America (267).

And he has a grand theory of the world to underpin it all. Mr Macron likes to speak of the *grand bouleversement* (great upheaval). By this he means the end of the unipolar, American-dominated global system that emerged after the cold war, and its replacement with a more fragmented world and a new round of great-power rivalry. To Mr Macron's mind, the best response to that shift is more "sovereignty", says one of his advisers, meaning "reinforcing the capacity to decide for ourselves, and continuing to be able to do so".

Mr Macron and his advisers think Russia's invasion has vindicated their worldview. When he set out his ideas in 2017, in a speech at the Sorbonne, his calls for "European sovereignty" sounded like high-minded abstractions. They are more concrete in a world in which Europe no longer talks only of rules, trade and peace, but also of guns, autonomy and power. In the aftermath of the invasion Germany has promised a huge boost in military spending. The EU is exporting arms to Ukraine and trying to reduce its dependence on Russian gas and promote self-sufficiency in energy. It is displaying a new-found liking for industrial policy. "The European conversation has rarely sounded so French," says Georgina Wright, of the Institut Montaigne, a think-tank in Paris.

Yet if Mr Macron's diagnosis has become popular, his practical prescriptions are proving less so. At the Munich Security Conference on February 17th he called for talks in Paris on the future of the conti-

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nent's air defences, and offered to discuss the "European dimension" of France's nuclear deterrent. Yet countries nearer the sharp end of the Ukraine war are concluding that only NATO—and specifically America, which provides the lion's share of the alliance's muscle—can guarantee their security. Even Germany, despite its talk of a historic *Zeitenwende* (turning point), has been reluctant to take big decisions without American cover, and is as keen as ever to buy American weaponry.

Semi-detached?

Mr Macron himself, who in 2019 told *The Economist* that NATO was experiencing "brain death", has shifted his tone on the alliance. He has helped to reinforce NATO's eastern flank with French troops, and talks more about a "European component of NATO" than full-blown "strategic autonomy". He has increased France's planned defence spending for 2024-30 by over a third, to €413bn ($437bn), compared with 2019-25. "I think he has finally understood NATO...and why it matters," says François Heisbourg of the International Institute for Strategic Studies.

Yet old assumptions die hard. In 1966 France removed its troops from NATO's integrated command structure, returning to it only in 2009. Despite the warm words and the extra money, many of the alliance's other members suspect that France will always keep a certain distance. "We still talk about NATO as if it is 'them' and not 'us'," says Camille Grand, a (French) former NATO official now at the European Council on Foreign Relations, another think-tank.

A further strain arises from French ambitions to build up European sovereignty on the one hand, while still asserting French national interests on the other. It is a decades-old tension. Charles de Gaulle, France's first post-war leader, sought to rebuild Europe as a powerful assembly of nations, while keeping France's "hands free" to conduct a diplomacy of geopolitical "balance". Today, Mr Macron likes to talk about France as a *puissance d'équilibres* (balancing power), that is independent and open to speaking to all.

Even today, that approach can annoy allies. For Mr Macron, the attempt to dissuade Mr Putin from war showed that Europeans could take the lead. The French president co-ordinated his 2022 trip to Moscow with Olaf Scholz, the German chancellor, and Volodymyr Zelensky, Ukraine's president. For Poland and the Baltic states, by contrast, long fearful of Mr Putin's expansionism, the visit underlined that the French president does not speak for them. These countries "will never back Macron's conception of strategic autonomy if he persists in thinking he can one day work with Putin," says Michel Duclos, a French former ambassador.

This tension is "almost insurmountable", says Benjamin Haddad, one of Mr Macron's parliamentarians: "It's very difficult both to have a special dialogue with countries like Russia or China, and to act as the pivot in Europe, building consensus and leveraging Europe to project power." Trying to have things both ways can lead to maddening ambiguity. Mr Macron has hardened his tone on Russia, declaring that it should be "defeated" and vowing to back Ukraine "all the way to victory". But he also says Russia should not be "crushed", and keeps a line open to Mr Putin, to whom he last spoke in September.

In reality Mr Macron's views are close to Joe Biden's, though America's president is more judicious about expressing them out loud. The French president wants to help Ukraine secure territorial advantage on the battlefield in order for it to dictate the terms of peace. Many fellow Europeans, though, conclude that Mr Macron is too accommodating to Russia. When talks come, the French president is keen to make sure that Europe has a seat at the table. Other Europeans are unsure they want that seat to be occupied by Mr Macron.

The third point of tension is between ambitions and means. Mr Macron has helped launch a "European Political Community" that reaches from Britain to Moldova, convened peace talks between Azerbaijan and Armenia, and warmed up ties with gas-rich Algeria. Paris hums with ideas on grand causes: preserving biodiversity, improving food security, ensuring "effective" multilateralism, curbing extremism online. Overstretch beckons. As Michael Shurkin at the Atlantic Council, another think-tank, put it diplomatically, France is a "strong ally stretched thin".

Mr Macron's decision last year to close down Operation Barkhane, a French-led counter-terrorism operation in the African Sahel begun in 2014, illustrates the point. Initially France helped beat back a jihadist incursion in Mali. But it could not counter anti-French sentiment, increasingly stoked by Russia. Eventually Mali hired the Wagner Group, a mercenary firm run by one of Mr Putin's cronies. Having pulled all French troops out of Mali, Mr Macron is now winding down most military bases in the region. Against Russia and China, France is losing the battle for influence.

I've had an idea...

Another illustration is AUKUS, a defence pact between America, Australia and Britain unveiled in 2021. This sank a French deal worth A$90bn ($60bn) to supply Australia with submarines, torpedoed France's Indo-Pacific strategy, and enraged its government. If allies can do this to each other, Paris concluded, then France is right to reinforce its independence. Mr Macron has since cultivated ties with other countries in the Indo-Pacific, including India, Japan and Thailand.

The upcoming trip to China will be Mr Macron's next diplomatic test. The French president believes that Europe should maintain its own dialogue with China, including over Mr Putin's war, and that keeping talks going can help lower tensions between the West and China. He had originally wanted to go to Beijing last year jointly with Mr Scholz (in the end, the German chancellor went solo). This time Ursula von der Leyen, the head of the European Commission, might join him. Even if she does, many Europeans will not feel that Mr Macron is making the trip for them.

Plus ça change

Some of these points of tension are structural. French ambivalence towards NATO long predates Mr Macron. But the president's personal manner can make things worse. "His style is to go for it, never give up, push as hard as possible, and take risks," says an aide. He listens to many, but is beholden to none. Ultimately, says Bruno Tertrais of the Foundation for Strategic Research, a think-tank, "Macron's chief diplomatic adviser is Macron."

For the president's critics it is exactly this unilateralism, a failure to craft meaningful alliances, and a tendency to say out loud things that might more usefully be kept quiet, that irks others and saps his influence. From Lebanon to Russia, Mr Macron has little to show for his personal outreach. "He has too many ideas, all the time," says a European diplomat, "so it is hard to make any of them stick."

But Mr Macron is not about to stop suggesting them. This will keep him both an impressive and tricky partner. "The president will never accept that France is a middling power," says a presidential aide. "He believes that without an ambition of *rayonnement* (influence), of being open to the world, of speaking to everybody, France would not be itself." ■

The Economist

SPECIAL REPORT:
Taiwan

March 11th 2023

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Frontline Formosa

Caution:
elephant in the room

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A vital island

Taiwan's fate will, ultimately, be decided by the battle-readiness of its people, says Alice Su

When Taiwan's president, Tsai Ing-wen, announced the extension of military conscription in December 2022, she called it an "incomparably difficult decision". Taiwan's young were previously subject to only four months of conscription. Starting from 2024, they will serve a year each, with improved training. "No one wants war," she said. "But peace will not fall from the sky." Taiwan must prepare for war, she added, to prevent it.

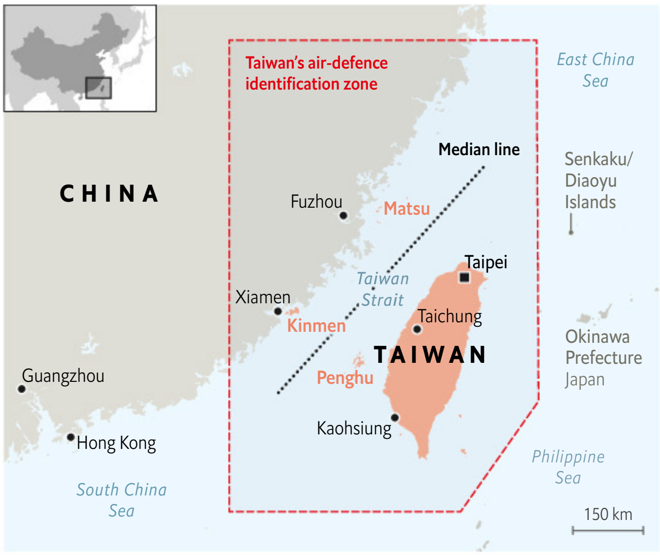
Ms Tsai's decision should not have been so difficult. That it was reflects a troubling reality: Taiwan has not made up its mind how or even whether to defend itself. It is at once the "most dangerous place in the world" yet numb to China's threat. Only since Russia's invasion of Ukraine has serious debate about a possible Chinese invasion become normal. That is in part because China's Communist Party is engaged in an information war designed to sow confusion. It also reflects Taiwan's tortuous history and politics.

Western officials are already planning for Taiwan's possible struggle against China. Yet Taiwanese have no consensus on who they are, how they relate to China or if they should ever fight. Their future depends on how they answer these questions especially as the next presidential election approaches.

China sees Taiwan as a renegade province that it has threatened with invasion for more than 70 years. But until recently war seemed unlikely. With American help, Taiwan had the military edge throughout the 20th century, and an ambiguous but secure place within a peaceful Sino-American relationship. In the past decade, though, that relationship has flipped from economic co-operation into overt competition. China's president, Xi Jinping, speaks of national rejuvenation in terms of victory over America, and has expanded his army at an alarming pace. The People's Liberation Army has begun beating the Americans in war games. China boasts the largest navy in the world, with an expected force of 400 ships by 2025 (America has less than 300, Taiwan just 26). It has expanded its missile and nuclear arsenal to keep foreign forces away from the Taiwan strait.

China is also taking more "grey zone" actions (threatening moves short of war). The number of Chinese warplanes crossing the strait's median line, an unofficial divider, and entering Taiwan's south-west air-defence identification zone, has almost doubled in the past two years. The figure rose especially sharply after Nancy Pelosi, who was then speaker of America's House of Representatives, visited the island in August 2022. China acted out a mock blockade after her visit, firing missiles directly over Taiwan for the first time.

While American officials prepare for a worst-case scenario of all-out invasion, Taiwan's defence ministry is more concerned about "grey zone" actions such as a blockade or the seizure of an outlying island. Taiwan's main island is roughly 160km away from the Chinese coast, but the island of Kinmen is only 3km away. Kinmen has been a conduit of cross-strait tourism and economic exchange. It has been importing water from China through a 16km pipeline ever since 2018. Some of those who urge Taiwan to prepare for invasion have suggested that, after seeing the impact of sanctions on Russia because of its attack on Ukraine, China would need a quick conquest of Taiwan, not a drawn-out conflict. Taiwanese officials worry that grey zone actions might serve as an early test of international will. America might well fight China to ▸▸



defend Taiwan—but would anyone fight for Kinmen?

As Chinese pressure on Taiwan grows, the Taiwanese look for the world's support. Taiwan stands "at the vanguard of the global defence of democracy", Ms Tsai has said. To let it go under would be a devastating step towards the might-is-right world that both Mr Xi and Russia's Vladimir Putin seem to favour.

Taiwan also has outsize importance in the world economy. A conflict over Taiwan would do a lot more damage even than Russia's war on Ukraine. Taiwan makes more than 60% of the world's semiconductors, which power everything from mobile phones to guided missiles, and 90% of the most advanced sort. Rhodium Group, a research outfit, estimates that a Chinese blockade of Taiwan could cost the world economy more than $2trn.

First defend yourself

Taiwan's leaders know that neither strong democracy nor economic importance is enough. The Ukraine war has taught them that a small country bullied by a bigger neighbour must demonstrate that it has the will to resist. Fight back, and there is more chance that the world will come to your aid. But Taiwan is not ready to fight. After decades of falling defence spending, its army has shrunk to a paltry 163,000 active soldiers (against China's 2m). It has more than 2m reservists, but can train only 110,000 of them each year. Taiwanese conscripts often liken their training time to "summer camp", joking about sweeping floors and pulling up weeds, not learning to fire weapons.

American officials and retired Taiwanese military leaders worry about Taiwan's defence strategy. Its generals spend too much of their defence budget on fighter jets, tanks and battleships that may have been useful 30 years ago against a weaker China, but are now vulnerable to Chinese missiles. Taiwan's government repeats American talking-points about asymmetric warfare, the fighting a small country needs to defend itself against a larger enemy, but its army has yet to commit to it. Ms Tsai's announcements of conscription and training reform are a step forward, but not enough.

Taiwan's leaders know that neither strong democracy nor economic importance is enough

The most threatening Chinese attack against Taiwan may be psychological. Since the Ukraine war began, Taiwanese media have been flooded with conspiracy theories and Chinese propaganda stirring mistrust of America. NATO backed Russia into a corner, it is often claimed, and is sacrificing Ukraine for American interests. Taiwan must beware of America pushing it to be the next Ukraine. Such stories are surprisingly widespread in Taiwan. When China launched military exercises around Taiwan after the Pelosi visit, many blamed the Taiwanese government and American politicians for provoking it, not China for threatening the island.

Such victim-blaming is in part a product of Chinese disinformation designed to upset Taiwanese society. But it also reflects Taiwan's history. Taiwan's official name is the Republic of China (ROC), which dates from 1912, when the Qing dynasty was overthrown. The nationalist Kuomintang (KMT) party incorporated Taiwan into the ROC in 1945. It fled to the island after losing the civil war in 1949, and then imposed an authoritarian one-party system and four decades of martial law, forcing the local population to speak Mandarin and to embrace a Chinese identity.

Only after Taiwan democratised fully in the late 1980s did a suppressed local identity re-emerge. Polls in 1992 found just 17.6% of respondents identifying as Taiwanese, against 25.5% as Chinese and 46.4% as both. By 2022 a similar poll by the Election Study Centre at National Chengchi University found 61% of respondents identifying as Taiwanese, 2.7% as Chinese, and 32.9% as both. Younger generations born after the lifting of martial law hold especially strong Taiwanese identity. Yet a minority of Taiwan's older generation still identifies with China and hopes one day to be part of the mother country. America's switch of recognition to communist China and its discouragement of Taiwan's independence have also fostered more mistrust of Washington.

The next presidential election is due in early 2024. Candidates will have to propose a new vision for Taiwan's future in a world of deepening Sino-American hostility. Looking at the identity polls, it might seem that Ms Tsai's pro-independence Democratic Progressive Party (DPP) should win easily. Support for independence has grown and support for unification has dropped. KMT affiliation has fallen as DPP affiliation has risen.

Identity is not the only factor in Taiwan's politics. A plurality of Taiwanese are undecided on either party affiliation or on independence versus unification. Around 57% of respondents in recent polls support the "status quo" of de facto independence—and no war. Yet voters may have to choose between one or the other: fighting for sovereignty or surrendering for peace. The Chinese Communist Party pushes the defeatist message that America is manipulating Taiwan's "separatist" leaders to provoke China, and it will be their fault if China is "forced" to attack. Taiwanese should instead quietly co-operate with China against a deceitful West.

Taiwan's youth may be inured to such propaganda. But they are the group with the lowest voter turnout. The highest turnout is among those aged 55-75, who include conservatives most likely to favour appeasement. "Vote for the DPP and your youth go to the battlefield. Vote for the KMT and there will be no cross-straits war," declared Ma Ying-jeou, a former president and KMT leader, before local elections in November, which the KMT won. Local elections may be more of a judgment on city- and county-level government than on policy to China. But the talk of war in this campaign was a preview of a larger debate about to take place in Taiwan.

Taiwan is a democracy, so its future lies in its people's hands. But that makes it vulnerable to authoritarian exploitation. China is already promoting defeatist and divisive ideas in the Taiwanese media. It is up to the Taiwanese to unite against them. They must decide who they are, what they believe in, whether they will fight and what that might cost. They should value their freedoms enough to be ready to make sacrifices for them. That is a politically difficult message, though not an entirely new one. After all, the freedom they enjoy now also came at a price. ■

The past

A people divided

Understanding Taiwan requires study of its history

In the centre of Taipei is a sprawling memorial to Chiang Kai-shek, leader of both the KMT and the Republic of China (ROC), which formally moved to Taiwan in 1949. A bronze statue of the general sits atop a white marble tower, gazing towards China and his lost capital of Nanjing. A newcomer to Taiwan might assume it is just a monument to a beloved founding father.

But inside the building the exhibitions divide into two. One side pays homage to the ROC. Dark display chests hold its founding charter. Two sleek black Cadillacs that once carried Chiang around Taipei hint at the glamour of ruling one of the world's richest political parties. On the other side a new exhibit decries the KMT's brutal dictatorship. Poems about censorship evoke the stark drama of a prison cell. Black-and-white portraits of massacre victims' children line one wall. Another wall shows pictures of Taiwanese protesters demanding free speech.

The two exhibits tell different versions of Taiwan's story. The first is defined by a nationalist nostalgia for the lost homeland. The second displays a decades-long struggle for democratic rights. At the heart of Taiwan's political divisions today is disagreement over how to reconcile the two sides of the island's history.

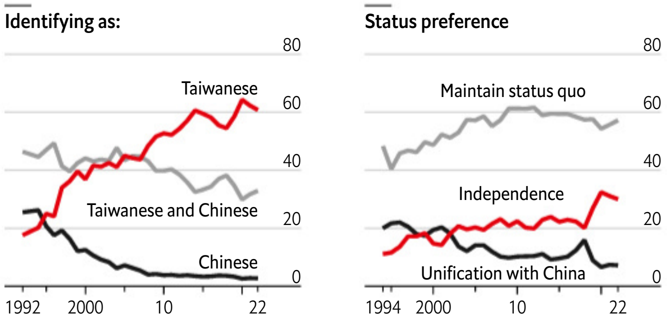
When the KMT took over Taiwan in 1945, it imposed mainlanders' rule on a people who had been colonised by the Japanese for half a century and hoped to be treated as equal citizens. Instead the Taiwanese were forced to adopt the Mandarin Chinese language and to watch as the KMT plundered the island's resources to support its war. When Taiwanese people protested in 1947, KMT troops slaughtered an estimated 18,000-28,000 in what became known as the February 28th massacre. In 1949 the KMT imposed martial law on Taiwan, beginning a four-decade period of suppression often called the "white terror".

The KMT asserted control over every aspect of life, using surveillance, propaganda and censorship reminiscent of the Chinese Communist Party's. Its army served the party more than the country, and it had two enemies: communist spies and independence activists. At least 140,000 people were imprisoned, including many from the intellectual elite. Taiwanese activists suffered arrests, executions and exile in their 40-year fight for democracy. Only in 1987 did the KMT drop martial law. Only in 1996 did Taiwan hold its first competitive presidential election. In 2000 Taiwan elected its first opposition president and vice-president, Chen Shui-bian and Annette Lu (a former political prisoner).

A dictatorial founder

Identity issues

Taiwan, % responding



Identifying as:

Status preference

Source: Election Study Centre, National Chengchi University

Taiwan today feels a long way from this past. Old jails and execution sites are now independent bookshops and riverside parks. The streets are filled with banyan trees and bubble-tea shops. Taiwan's residents enjoy one of the world's best universal health-care systems. There is a vibrant civil society, with activists working for a better environment, for migrant rights and for gender equality. President Tsai Ing-wen apologised to Taiwan's indigenous people for their mistreatment in 2016. In 2019 she oversaw the legalisation of same-sex marriage.

Remembrance of things past

Yet Taiwan has not reached a consensus on its history or its identity. There was no sharp break of the sort that took place in post-war Germany or post-apartheid South Africa. That is good, says Nathan Batto of the Institute of Political Science at Academia Sinica: sudden transitions often come only after traumatic crises. But it also means that Taiwanese society exists without a reckoning for its authoritarian past. "This process comes differently for every person," says Mr Batto. "Everyone will come to it at their own pace, in their own way—and some people won't at all."

The ROC legislature passed laws in the 1990s to compensate victims of the February 28th massacre and of martial law. In 1995 Lee Teng-hui, the KMT president, apologised publicly. A later KMT president, Ma Ying-jeou, approved the National Human Rights Museum. In 2018 Ms Tsai formed a transitional justice commission to open up political archives to the public, overturned wrongful convictions during the "white terror" and tried to remove authoritarian symbols such as statues of Chiang Kai-shek. These moves were controversial. DPP supporters complain that KMT-led efforts did not go far enough. KMT voters accused the DPP of exploiting the transitional justice commission for political gain.

Taiwan struggles to face its history without political acrimony, says Tsao Chin-jung. Mr Tsao is a 70-year-old author of a collection of oral histories from female survivors of KMT concentration camps set up in the 1950s on an island off Taiwan. Several thousand prisoners, including nearly a hundred women, were subjected to political re-education and forced labour. In 1953 some re- ▸▸

belled against camp demands that they write nationalist slogans in blood and tattoo them on their bodies. Fourteen prisoners were executed. It is a chilling parallel to the labour camps the Chinese Communist Party has always run. That is why Mr Tsao collected his accounts, he says. Taiwan must understand its history to avoid repeating it. China's ambassador to France recently said Taiwanese citizens will need "re-education" after reunification.

Mr Tsao's book of oral histories was turned into a film, "Untold Herstory", last October. "The whole point of the film was to say, don't be so quick to draw lines between you and me," he says. He included complex characters who were at once collaborators and victims of an authoritarian system, in the hope of encouraging more nuanced reflection on the period. Yet public reaction to the film was "disappointing", he says. Even before it came out, KMT supporters were criticising it as a distortion of the truth. It was released just before local elections, sparking accusations that this was done to win the DPP votes. One cinema in central Taiwan had to stop screening the film after online attacks.

Such political polarisation may sound familiar to many. But Taiwan is unique in being a democracy without statehood, isolated by a superpower neighbour that denies its right to exist. ■

The economy

Enemy at the gates

Taiwan's economy is strong enough, but it badly needs to reduce its reliance on China

TAIWAN HAS long depended on America for defence and China for growth. That worked when the two superpowers broadly co-operated. Taiwan flourished in an age of globalisation, building both a strong economy and its own security on hopes that free trade would prevent conflict. But in the process it became dependent on trade with its greatest threat. Now China is using its economic clout to isolate Taiwan.

In 2010 Taiwan signed the Economic Co-operation Framework Agreement (ECFA), a deal with China that allowed cross-strait trade to grow. China had been Taiwan's leading trade partner since 2005, when it made up 17% of its trade flows. Last year China accounted for 25% of Taiwan's exports and 20% of its imports, roughly the same shares as in 2016, when Tsai Ing-wen became president. She was elected after a student movement had protested against growing dependence on China. She herself had criticised the ECFA, but has not changed it as president. That is because her priority was stability, says Taiwan's deputy minister of economic affairs, C.C. Chen. "From day one, when President Tsai took office, China has been our largest trade partner. We don't want to rock the boat. We want to make it stable."

Instead of pushing for decoupling from China, the new government pursued diversification, particularly to South-East Asia. Ms Tsai's "New Southbound Policy" promotes trade and investment with the rest of the region, including ten members of the Association of South-East Asian Nations (ASEAN), six other countries in South Asia, and Australia and New Zealand. The value of trade with all these countries has increased from $96bn in 2016 to $180bn in 2022. Investment flows have risen from $2.4bn in 2016 to $5.3bn in 2022. In 2022 Taiwan's investment in these countries combined made up about 35% of its total investment abroad, outstripping investment in China for the first time.

Taiwanese investment in China has dropped partly because of political risk and covid-19. But it is also because manufacturing is moving to South-East Asia in pursuit of lower labour costs. That reflects regionalisation of supply chains, not wholesale exit from China. Yet Taiwan faces a unique obstacle to further regional integration: China wants to exclude it, and has the clout to pressure its neighbours. Taiwan has but a handful of free-trade agreements. It hoped its latest FTAs, signed with Singapore and New Zealand in 2013, would pave the way for its eventual entry into the Regional Comprehensive Economic Partnership (RCEP), which includes 15 Asia-Pacific countries. But it has been blocked by China.

> **Trade deals would help stabilise the Taiwan strait by strengthening the status quo**

Taiwan has also applied to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), a trade deal that replaced the Trans-Pacific Partnership after Donald Trump pulled America out in 2017. However China has applied too. According to Taiwan's foreign minister, Joseph Wu, the CPTPP members agree that Taiwan meets the required standards. Yet they fear Chinese retaliation if they were to admit the island.

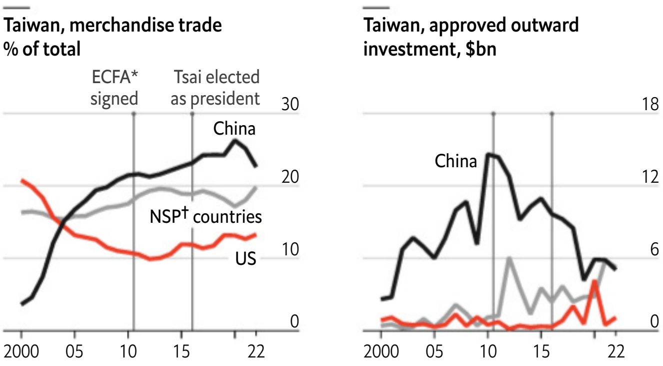
China has found other ways to punish Taiwan for asserting its sovereignty. In August 2022, just after Nancy Pelosi's visit, China suspended imports of more than 2,000 Taiwanese food products. It has banned Taiwanese pineapples, beer, grouper fish, pomelo and other goods heavily dependent on the Chinese market. Mr Chen notes that these goods comprise less than 2% of Taiwan's total trade with China, so the economic impact is small. China has noticeably refrained from banning Taiwanese chips or other high-tech products it most needs.

Taiwan's government has launched campaigns (#FreedomPineapple) asking friendly countries like Japan to import more Taiwanese farm products whenever China imposes a new ban. They say this has increased Taiwan's trade diversification. Yet the bans still have a political impact, and they affect Taiwanese livelihoods.

"We want the world to recognise that our policy is actually to maintain the status quo," says Mr Chen. China is trying to shrink Taiwan's economic space, he says. Taiwan joined the WTO in January 2002 (just after China) and should accordingly have a right to trade as freely as China. But China continues to use its economic clout to intimidate Taiwan's would-be trade partners not to sign free-trade deals or include the island in trade blocs.

Mr Chen argues that trade deals would stabilise the Taiwan

Dependence days



*Economic Co-operation Framework Agreement †New Southbound Policy, includes ASEAN countries, Australia, Bangladesh, Bhutan, India, Nepal, New Zealand, Pakistan and Sri Lanka
Sources: Ministry of Finance; Ministry of Economic Affairs

strait by strengthening the status quo. Foreign governments should not accept China's view that trading with Taiwan is an escalation that hurts China's interests, he argues. "A free-trade agreement is nothing more than trade. It just puts us on an equal footing." The most sought-after partner would be America, Taiwan's second-largest market. America accounted for 13% of Taiwan's total trade in 2022, compared with China's 23%. Yet the American consensus on supporting Taiwan has not translated into stronger support for a free-trade agreement.

Donald Trump was popular in Taiwan because he took an early call from Ms Tsai and was hawkish on China. But his administration put bilateral trade relations in an "ice age", says Andrew Wylegala, president of the American Chamber of Commerce in Taiwan. The Trump administration froze trade talks with Taiwan for four years as Robert Lighthizer, the trade representative, focused on a deal with China. Such treatment feeds Taiwanese anxieties about being a pawn in the two superpowers' game.

The Biden administration is no less serious about countering China's rise, though it favours alliance-building and security partnerships. Yet it is behind on the economic front. In 2022 America launched the Indo-Pacific Economic Framework for Prosperity, an initiative meant to increase trade with Asian partners that fell short of a free-trade deal. It excluded Taiwan. Too many Asian partners feared punishment from China. America has instead designed separate smaller trade initiatives with Taiwan.

Taiwanese officials still hope to move closer towards a free-trade deal. Ms Tsai eased rules on imports of American pork in 2020, despite public concerns about its safety. The main obstacle to a deal now is neither Chinese intimidation nor Taiwanese protectionism, but American public opinion, says Mr Wylegala. If America really wants to wean Taiwan off its dependence on China, it must overcome its "allergy to free-trade deals", he concludes. ■

Chips with everything

America and China are pushing Taiwan's chipmakers to choose sides

THEY ARE the chips that power everything from mobile phones to electric cars—and they make up 15% of Taiwan's GDP. Taiwan produces over 60% of the world's semiconductors and over 90% of the most advanced ones. Most are manufactured by a single company, Taiwan Semiconductor Manufacturing Corporation (TSMC). Until now, the most advanced have been made only in Taiwan.

The semiconductor industry is called Taiwan's "silicon shield", giving the world a big reason to defend the island. Yet chips are the industry most affected by the split between America and China. Parts of the shield are now moving abroad. In December TSMC held a ceremony to mark the start of a chip plant (or "fab") in Arizona. Joe Biden was there, as were Tim Cook from Apple and TSMC's founder, Morris Chang. Mr Chang said TSMC would triple its investment in Arizona to $40bn, open a second fab in 2026 and make three-nanometre chips, now the most advanced, in America. Mr Biden declared that "American manufacturing is back, folks." Mr Chang more morosely called globalisation and free trade "almost dead".

The chip industry was built on globalisation, with every part of the supply chain supporting it. TSMC's fabs, based on efficiency and high-skilled, long-hour labour, could make chips faster and more accurately than any rival. Experts agree that replicating this supply chain elsewhere would be inefficient. Mr Chang told reporters in November that the cost of making chips in America would be 55% higher. He reportedly told Nancy Pelosi that American efforts to bring the business home were "doomed to fail". Yet the shift to local supply chains is happening, boosted by covid-19 and the war in Ukraine. Governments want critical tech made in safer places, closer to home. And America and China are competing to control the most sophisticated chips that may prove crucial to the next generation of advanced weapons.

Taiwan is pulled between the two. China has poured $50bn into chipmaking, hoping to meet 70% of domestic demand for chips by 2025. It has also poached Taiwan's chip engineers, executives and trade secrets. That brain drain has alarmed Taiwan's government, which has raided Chinese chipmakers and passed new laws against economic espionage. America is also trying to stop China getting advanced chips. It passed the CHIPS and Science Act in August 2022, offering $39bn in subsidies and a 25% tax credit to promote manufacturing at home, as well as $13bn of investment in chip research. In October 2022 it banned the export of advanced chips and chipmaking gear to China.

A fab company

America's success in bringing TSMC to Arizona sparked alarm in Taiwan. The KMT accused the government of "gifting" TSMC to America. "TSMC will surely become USMC in the future," said Tseng Ming-chung, a KMT legislator. Officials say such fears are overblown. TSMC aims to produce 600,000 wafers a year at its American fabs. But its manufacturing capacity is more than 13m wafers a year. It is also building a new fab in Japan and considering one in Europe. "It's not that Taiwan's cake is being cut in half. The cake is getting bigger, and we're giving some of the extra slices to America and Japan," says Emile Chang from the economic ministry.

The minister of economic affairs, Wang Mei-hua, says TSMC's new fabs do not mean a loss of Taiwan's advantage. The most advanced nodes will still be made in Taiwan, and research will stay. In January Taiwan passed its own chips act, offering tax subsidies worth 25% of research costs. Foreign chipmakers are investing in Taiwan. ASML, a Dutch company that makes advanced lithography machines for cutting-edge chips, is opening its sixth factory in Taipei in 2023. Micron and Applied Materials, two American semiconductor firms, are expanding in Taiwan.

None of this changes the fact that "friend-shoring" semiconductor making will involve inefficiencies. But this is the reality of a world reshaping itself around geopolitical risk.

The home front

Cognitive warfare

First aid first

China hopes to make Taiwan surrender without fighting

Robert Tsao pulled a helmet on, grinning as he held up a copy of his Taiwan identity card. "I am 100% Taiwanese, and I've come back to defend my country," he said. It was September 2022, weeks after Nancy Pelosi's visit was followed by belligerent Chinese military exercises around Taiwan. The billionaire founder of UMC, Taiwan's second-largest chipmaker, announced a $100m donation to Taiwan's defence. He promised to support the training of 3m "black-bear warriors" over three years.

Mr Tsao, who is 76, had given up citizenship and emigrated to Singapore after the Taiwanese government sued him for illegally investing in China in 2011 (he was found not guilty). He had also once proposed a referendum on peaceful unification with China. But now he called on the Taiwanese to stand up against Chinese Communist Party "thugs". Taiwanese reporters wondered if he had lost money in China or been paid off by a political party before the local elections. Why would such a successful businessman put money into Taiwan's defence, when anyone he trained would not even be legally allowed to pick up weapons? Was this all just a propaganda campaign?

In Mr Tsao's view, that is exactly the point. He spoke up after the Pelosi visit not because of China's military exercises, but because of the media response. Too many commentators criticised the government and the Americans for upsetting China, not China for intimidating Taiwan. "It's as if we are victims of domestic abuse, but when police come to check on us, we say: 'Don't let them come or we'll be abused more.' So cowardly!" says Mr Tsao. This comes after decades of Chinese propaganda telling the Taiwanese they will be safe from war so long as they don't annoy China. That is dangerously naive, says Mr Tsao, who witnessed China's crackdown on Hong Kong's pro-democracy protests in 2020.

Red menace

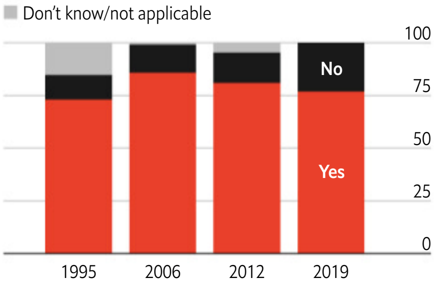
China's Communist Party has been running psychological operations against Taiwan for decades. It tries to affect Taiwanese thinking in two ways: by cultivating businessmen and politicians to support unification, and by sowing defeatism. China works not only through traditional media, but also by hiring Taiwanese influencers and posting false content on social media. Chinese disinformation exploits a media scene that is already rife with rumour-mongering.

When Hong Kong's protests broke out in 2019, Chinese-run social media carried disinformation about protesters taking American money and being controlled by the CIA. Before Taiwan's 2020 presidential election, Taiwanese media spread false claims that Tsai Ing-wen had faked her doctoral dissertation, which Chinese media picked up and amplified. The London School of Economics had to make an official statement certifying her thesis.

The growth of Chinese disinformation in Taiwan has raised social awareness and resistance. Thousands protested in 2019 against the influence of "red media" such as those of Want Want Group, a food company invested in China, that are said to co-ordinate coverage with Chinese officials. Taiwan's media regulators fined Want Want's TV channels several times for failure to check facts, and terminated one channel's broadcast licence in 2020. Those restrictions sparked accusations of censorship.

Fighting spirit

Taiwan, willingness to fight for country if there is a war, % responding

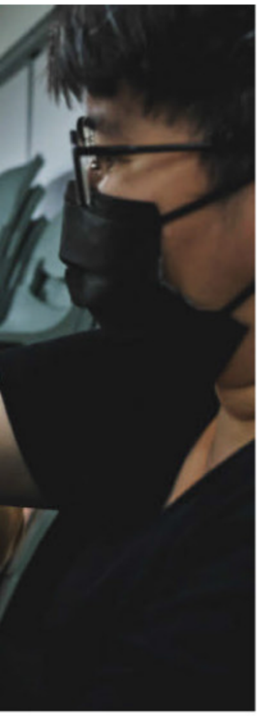


Sources: World Value Survey; Academia Sinica; National Chengchi University

Taiwan has had more success in strengthening civil society and transparency than in curtailing "red" speech. A flurry of fact-checking organisations post rebuttals to false narratives in the media. One group made a chatbot that could detect false messages and automatically send fact-checks. Taiwan has added online- and media-literacy programmes to public education. It requires government agencies to debunk disinformation on a "222 principle": responses should be posted within two hours, with 200 words and two images, making official clarifications speedy, clear and easy to share. Ms Tsai's presidential victory in 2020, with a record 8.2m votes, showed that the strategy worked. Although 80% of respondents to exit polls said they had heard that Ms Tsai's thesis was fake, only 20% believed this to be true.

The information battle rages on. After Russia invaded Ukraine, public confidence that America would send troops to defend Taiwan against an invasion fell from 65% in October 2021 to 34.5% in March 2022, according to polls from the Taiwan Public Opinion Foundation. Taiwanese respondents were more confident (43%) of Japanese assistance in a war than of American help. That belief is divorced from geopolitical reality, says Taiwan's foreign minister, Joseph Wu. But it was influenced by propaganda in Taiwanese media blaming NATO, not Russia, for the Ukraine war.

Taiwanese society is susceptible because of its authoritarian history, says Lee



Ming-che, an activist who returned to Taiwan in 2022 after five years of imprisonment in China. Mr Lee was convicted of "inciting subversion of state power" because he raised funds for families of Chinese political prisoners. In the 2000s, when cross-strait relations were close and China more open, Chinese activists often came to Taiwan to learn how it moved away from one-party authoritarianism. "They thought, and so did we, that Taiwan could show the way forward for China," says Mr Lee.

The past five years have shattered that illusion. Imprisoned in Hunan, Mr Lee spent his days sewing gloves, shoes and purses, and his nights watching propaganda. He experienced how China treats its people "as machines to be controlled, not as humans". He shifted from hopes of Taiwan inspiring change in China to the need to protect Taiwan from a Chinese takeover.

While Mr Lee was in prison, his wife Lee Ching-yu spearheaded a campaign to save him. She flew to America and Germany to demand that China adhere to its laws, and led a letter-writing drive to promise he had not been forgotten. Yet some Taiwanese media criticised Ms Lee for provoking China and Mr Lee for having gone there. Ms Lee was urged to keep quiet and look for ways to collaborate with China to save her husband. She refused.

That kind of victim-blaming is a leftover from Taiwan's martial-law era, says Mr Lee. "We are taught to obey power. We fear and respect it. We demand a lot from the victims, but we are gracious to the abuser." It suits China that Taiwanese censor and blame themselves. That may be how many Taiwanese survived decades of political oppression. But Mr Lee insists that, in the case of China, "backing down to appease them does not work." What does work, he says, is resistance.

That message is new to many Taiwanese, although activist groups are now promoting it. One is Kuma Academy, the non-profit where Mr Tsao's 3m warriors are trained. The training does not involve actual weapons. Rather it aims to teach civilians about modern warfare, Chinese disinformation and first aid. Puma Shen, one of Kuma Academy's co-founders, says the point is to get the Taiwanese to think seriously about the risk of war and what to do if it comes.

That is already a big step, say two young men at a Kuma Academy training session in the basement of a church. "We don't have a sense of crisis," says Weng Shih-hsuan, a software engineer. Despite the growing threat of Chinese aggression, none of his family ever talks about war, he says. "Even this morning I was thinking, defence is not my responsibility. The government should serve me." But the Kuma lectures have changed his mind. If war does come, he says, everyone will have to respond. Taiwan should expand this training to its schools and military, he adds, saying they would be more valuable than today's conscription.

His friend Tsai Cheng-wei, another young software engineer, agrees. Taiwanese society needs to get over its fear of war, he says. "Everyone is used to thinking, 'We just want peace'. But the question is, if you want peace, what kind of risk are you willing to undertake to attain it?" The best way to stop a war is to increase the cost to the invader by mobilising nationwide resistance, he reckons. Such thinking is growing faster in civil society than among Taiwan's armed forces. ■

Defence

Fending off Goliath

Taiwan's defence strategy lacks clear priorities and is clouded by its allies' ambiguity

THE *YU SHAN* landing platform is one of the navy's largest vessels. The 10,000-tonne warship rises out of the water at Zuoying naval base, its missiles pointing skyward. In January the defence ministry invited reporters aboard, noting that the ship could carry amphibious assault vehicles, land helicopters and launch smaller boats. This is Taiwan's first amphibious warship of such a size, replacing an American one built in 1969. President Tsai Ing-wen praised it as a symbol of Taiwan's "national defence autonomy". Taiwan must counter Chinese threats by giving its armed forces the best equipment, she declared.

The *Yu Shan* is certainly impressive. But Taiwan's prioritisation of such equipment is at the heart of a debate over its defence strategy. American experts criticise Taiwan for spending too much on expensive items without asking what they would do in a war. Instead of buying and building big ships, jets and tanks that can easily be disabled by Chinese missiles, they say Taiwan should build up ammunition reserves and buy cheaper and more mobile weapons. Taiwan needs a "porcupine" strategy to make it more painful for China to take over. That requires an approach that treats invasion as the top priority, rather than seeing invasion and "grey zone" threats as equally important.

Taiwan's leaders do now speak of "asymmetric warfare", the need for small powers to focus on the weakest point of a bigger enemy. Yet they are unwilling to give up conventional defence, because there is no guarantee that America would step in. America has had no obligation to defend Taiwan since 1979, when it ended its mutual-defence treaty. It enacted the Taiwan Relations Act, under which America provides arms "of a defensive character" and sees any non-peaceful effort to determine Taiwan's future as "a threat to the peace and security in the Western Pacific area and of grave concern to the United States".

This leaves the issue of American military intervention deliberately vague. Joe Biden has said four times that American troops would defend Taiwan if China invaded. Each time the White House has clarified that policy is unchanged. Officially America holds only to the view that Taiwan's sovereignty should be "decided peacefully by the Chinese themselves". But Mr Biden has tweaked the phrasing. "Taiwan makes their own judgments about their independence," he said last September. Nancy Pelosi added that independence is "up to Taiwan to decide". Former Trump officials have gone further, calling for recognition of Taiwan as a country and an end to strategic ambiguity.

Taiwan also needs to change strategy because China has changed. It began in the 1990s, when China fired missiles into the Taiwan strait. America's navy sent two carrier groups, sailing one through the Taiwan strait, to deter further action. China has since been developing the naval, air and missile capacity to stop America defending the island. Experts fear that China's missiles could disable Taiwan's navy and air force: jets could not take off if runways were bombed and the navy would have to set sail to survive.

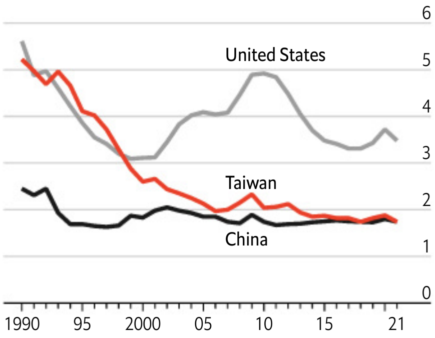
Taiwan needs a "porcupine" strategy to make it harder for China to take over

America's defence planners realised

they had to change course to deal with a stronger China. American troops are returning to bases in the Philippines after a 30-year absence. The marines have got rid of tanks and are reorganising their land army into smaller, island-hopping amphibious regiments. They have urged Taiwan to shift towards focusing less on overpowering China (now an impossibility) and more on fortifying the homeland.

Too big a peace dividend

Defence spending, % of GDP



Source: SIPRI

Admiral Lee Hsi-ming, the ROC chief of general staff in 2017-19, shares this approach. He proposed a defence concept that prioritises the littoral battle, meaning less spending on the newest, biggest tanks, jets and ships, and more on missiles and mines that might obstruct a Chinese invasion, as well as on mobile weapons. However the admiral worries that Taiwan has lost sight of this concept since he retired. Taiwan continued to ask for expensive weapons like M-1A2 Abrams battle tanks and F-16 fighter jets—although American defence experts say these could serve no sensible purpose. In recent years Americans have lost patience with Taiwan's military leaders. The government is starting to reject Taiwanese weapons requests and attempting to sell asymmetric systems instead.

My weapons are bigger than yours

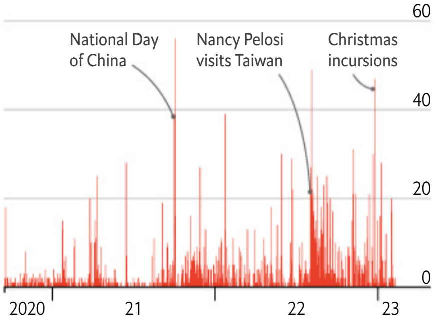
Critics say the problem is old-fashioned thinking among service chiefs who joined up in the days of martial law. They want to upgrade their forces according to battle plans built around the old dream of taking back the mainland. "They're building what they want based on their image of themselves, rather than what they need based on the threat that they face," says Drew Thompson, who managed defence relations between America and Taiwan at the Pentagon in 2011-18 and is now at the Lee Kuan Yew school of public policy in Singapore.

Taiwan is mistakenly following the American military model, argues Mr Lee, despite its small size. "Even America is trying to tell Taiwan, don't follow me. Follow small, resilient countries like Ukraine. But we keep trying to buy more jets, tanks, and ships," says Mr Lee. The defence ministry counters that it needs conventional weapons to respond to grey zone activity around Taiwan. China sent 1,732 planes into Taiwan's air-defence identification zone in 2022, almost twice the number of incursions in 2021.

Some argue that Taiwan must prepare for all contingencies because doubts over whether America would intervene may persist even if fighting breaks out. If Taiwan could count on America joining the battle come what may, its armed forces could pivot back to being a porcupine that is hard to digest. But without that clarity, they must fear that they may fight alone. Americans retort that what Taiwan needs to demonstrate most is that it can survive more than a few days after a Chinese invasion. Even if America were committed to intervene, it might take a few weeks to mobilise, says Ivan Kanapathy, director for China, Taiwan and Mongolia at the National Security Council in 2018-2021. "No matter what we say, it's a question of what we can do. If we can't do it, it doesn't matter," says Mr Kanapathy.

Flying high

Chinese warplanes entering Taiwan's ADIZ*



Source: Ministry of National Defence

*Air-defence identification zone

Taiwan continues to build big ships and to buy better planes partly as a public-relations exercise. Politicians like to point to arms sales as evidence of American support. Better weapons boost morale. They demonstrate to the public that the government and the army are standing up to Chinese incursions.

Yet public polling finds low confidence in Taiwan's defences. Civil-military relations are complicated by the ROC's history. Under the one-party system, the army's enemies were not just China, but also independence activists. Only after Taiwan's democratisation was the army properly separated from the KMT. Reforms in the 1990s and early 2000s asserted civilian control, dismantled the army's secret police and removed political indoctrination from training. But the army is still one of Taiwan's most conservative, pro-KMT institutions. Many officers are "equally as suspicious of the United States as they are of China," says an American official once based in Taipei. As late as the mid-2010s, officers told him the Chinese were their cousins and they would "never fight for Taiwan's independence," he adds.

Democratisation also meant a shifting of budget priorities. Taiwan's defence spending dropped from a peak of 7.6% of GDP in 1979 to just 1.8% of GDP in 2016, when Ms Tsai took office (she has since raised it to an expected 2.4% of GDP this year). Those spending cuts were supported by both the DPP and the KMT. Both parties chose to spend more on politically popular areas like education and health care. Taiwan also began reducing conscription terms, from two years to one year in 2008 and then to only four months in 2013. The goal of cutting conscription was to create a more professional all-volunteer force. That would allow better training and a reshaping of the army from being a symbol of Chinese nationalist rule into a defender of Taiwanese sovereignty.

The results have been disappointing. Although training has improved, Taiwan's all-volunteer force was still 7,000 short of its target in March 2022, when it was only 163,000 strong. Joining the army is not popular, despite Ms Tsai's frequent donning of combat fatigues in photos. Both pay and social status of soldiers are low, and retention rates are poor. Taiwan also has a shrinking and ageing population, with a birth rate of only 0.87 per woman in 2022. Its interior ministry has warned that Taiwan's 2022 military intake was the lowest in a decade, and that the numbers of military-age youths will continue to decline.

Taiwan and America agree a Chinese invasion is not imminent, because China is not confident that it could deter American intervention and take the island. But it is past time for Taiwan to act. Just as Russia's annexation of Crimea in 2014 spurred reforms and new military training in Ukraine, Taiwan must overhaul its defences to prepare for Chinese aggression. It has taken some steps by extending conscription, increasing defence spending, changing arms purchases and improving training. Taiwan needs a better national security strategy and a serious public debate to build consensus, says Andrew Yang, a former defence minister. But, he adds, this would require a "healthy political environment" which Taiwan lacks. That is a test for the next presidential election. ■

Politics

A crucial vote

The presidential election will do much to decide Taiwan's future

TAIWAN'S NEXT presidential election is due in early 2024. As in past elections, the vote will be in large part a referendum on Taiwan's identity and future vis-à-vis China. Taiwanese identity is stronger than ever, with 61% of its people identifying as Taiwanese only. Yet it is not guaranteed that the Democratic Progressive Party (DPP) will win. Opinion polls find support for both main parties hovering around 25%, with the rest uncommitted to either party.

The DPP's probable nominee, Lai Ching-te, has expressed his vision of Taiwan: it is already independent, so has no need to declare independence. That clever phrasing was coined by President Tsai Ing-wen to reassure those worried that the DPP might provoke China by declaring independence. "Already independent" clearly affirms Taiwanese sovereignty. It remains a popular stance, but the DPP must sell a harder message now: that the Taiwanese have to make sacrifices to preserve that independence. This means embracing policies to prepare for war.

The KMT promises prosperity and peace. Under martial law, it had purged Taiwan of suspected communist spies. After democratisation, the KMT became a chief advocate of closer ties with the Chinese Communist Party, hoping economic interdependence would stop conflict and pull the two sides together. Ma Ying-jeou, a former KMT leader who was president in 2008-16, led a honeymoon with China, signing 23 treaties on cross-strait trade, and opening direct flights and school and business exchanges.

This engagement rests on what is called the "1992 consensus", based on a meeting between unofficial representatives of both sides. Neither could agree to the other's claim of ruling all of mainland China plus Taiwan. But they agreed that Taiwan was part of China, whoever ruled it. So they settled on the notion that "There is only one China, but there are different interpretations of what that China is." This was "Chinese playing word games, the highest level of rhetoric," says Jiang Yi-huah, prime minister during Mr Ma's second term. Nathan Batto at Academia Sinica has a less charitable description. "It was a lie to China, a lie to Taiwanese voters, a lie to the KMT themselves. It was based on everyone else ignoring the part they didn't like." Yet the ambiguity has allowed both sides to trade and prosper.

Born independent

Growing cross-strait ties have however raised anxiety about dependence on China. In 2014 students occupied Taiwan's legislature for more than three weeks in what became known as the Sunflower Movement, demanding a halt to a trade deal they said would open Taiwan up too much to Chinese influence. When they broke into the cabinet building, the government deployed riot police to expel them. Over 100,000 protesters rallied outside, waving banners with slogans such as "Save democracy, don't sell our country".

That movement marked a new generation in Taiwanese politics: youth born after martial law, often called *tianrandu*, "born independent". The Sunflower Movement helped Ms Tsai win the presidency in 2016. China's crackdown on Hong Kong then carried her to re-election in 2020. She beat the KMT candidate, who promoted the old mantra of getting rich through trade with China. That has lost appeal for a generation more concerned with sovereignty than with being Chinese.

The KMT will struggle to offer a new vision in the election. Its party charter still includes the 1992 consensus. But even Mr Jiang, the former prime minister, admits this has been overtaken. Were Taiwan to revert to the 1992 consensus, Xi Jinping insists it now means accepting that the Chinese Communist Party rules China, including Taiwan. That is unacceptable to most Taiwanese. American-Chinese relations have moved from engagement to confrontation, with Taiwan as a potential flashpoint. "This has gone far past what Taiwan can control on its own," says Mr Jiang.

The KMT has been unable to articulate a new cross-strait strategy beyond continuing dialogue with the Chinese Communist Party. That is no longer popular. The party's vice-chairman, Andrew Hsia, has been criticised by both the DPP and even by some KMT members for visiting China in August 2022 after its military exercises, and then again last month. Yet the DPP has also been hesitant about telling voters to prepare for war. DPP officials say the party leadership worries that talk of war is unpopular. The DPP has already softened its messaging, from Ms Tsai's slogan of *kangzhong baotai*, "Resist China and protect Taiwan", to the more pacific *heping baotai*, "Peacefully protect Taiwan".

It is not clear that Taiwanese public opinion is as allergic to talk of war as the DPP believes. In January the Taiwan Public Opinion Foundation found 72.7% backing for extending conscription. If the DPP takes serious action on defence reform, that may boost its vote. Polls find wide agreement that it is needed.

Taiwan's identity battle has gone beyond Taiwanese against Chinese, says Wu Jieh-min of the Institute of Sociology at Academia Sinica. He does not fear a vote for unification. But it is harder to persuade voters to support painful reforms for the sake of a sovereign future. They must be willing to endorse a "long-term vision for Taiwan," says Mr Wu, even if it requires sacrifices such as longer military service or a decoupling from China. ■

A sunflower moment

What Taiwan needs

Help wanted

A vibrant small democracy deserves the world's protection against a giant autocracy

In 2021 Lithuania allowed Taiwan to open a representative office in Vilnius under its own name, not "Chinese Taipei", as most de facto embassies are called. An infuriated China shut the Lithuanian embassy in Beijing, revoked its diplomatic visas and stopped trade. Lithuania's economy suffered. But it did not change course. In November 2022 it opened a trade representative office in Taipei. Taiwan said it would invest €10m ($9.9m) in Lithuania's chip industry. Some west Europeans complained about a lack of warning. But the Czech president, Petr Pavel, wants to meet Taiwan's president. Joseph Wu, the foreign minister, says most people do not see Lithuania as a warning against upsetting China. "They look at Lithuania and think, 'China shouldn't have done that.' "

That is the change in thinking Taiwan needs. For decades China has tried to isolate it, keeping the ROC out of international institutions and regional trade pacts. China has used its economic power to scare firms and governments from even using the name "Taiwan". That may be understandable for poor countries in need of Chinese money. But rich, democratic countries should not let China dictate their relations with Taiwan. Doing so only strengthens China's belief that it will enjoy impunity if it invades.

Russia's invasion of Ukraine was a wake-up call. Nearly 200 foreign officials came to Taiwan in 2022, many eager to discuss how to contain Chinese aggression. Such visits have accelerated since Nancy Pelosi's trip of August 2022, despite China's show of force that followed. Ms Pelosi's successor as house speaker, Kevin McCarthy, has promised to go to Taiwan. That could provoke China again. Mr Wu promises a welcome for Mr McCarthy—and indeed anyone else. "They cannot dictate how we make friends with the international community," he says. Such visits boost confidence, which is what the Taiwanese need most. "Any kind of gesture, however symbolic, allows Taiwanese people to understand that we are not alone," he adds.

Analysts are divided over how best to help Taiwan. Some actions are symbolic not substantive, says Bonnie Glaser of the German Marshall Fund. The national defence authorisation act of 2018 allowed American warships to call at Taiwan's ports, for example. Yet that would provoke a punitive response without improving Taiwan's defences, says Ms Glaser. Renaming Taiwan's de facto embassy in Washington or designating it as a non-NATO ally, both of which were proposed but dropped from a congressional bill in 2022, might create openings for Beijing to change the status quo in the Taiwan strait more in its favour.

"Of course we should not let Beijing define what we do and don't do," says Ms Glaser. But foreign governments should balance how China responds to acts of support against how they will bolster Taiwan's security. The most important way to do this is military help. Aside from arms sales, America is trying to improve training. European countries could do the same. If Taiwan decided to form territorial defence forces, they could learn from European experience. Asian countries might provide real-time intelligence to Taiwan in war, especially if undersea cables were cut.

The least confrontational yet most underutilised tools to strengthen Taiwan are economic. "I'd rather see a bilateral trade agreement than any of the sexiest, biggest weapons systems the United States could come up with to sell Taiwan," says Rupert Hammond-Chambers, president of the US-Taiwan business council. Despite resistance to free-trade deals in America, there is rare bipartisan consensus on the need to support Taiwan. A study by the Heritage Foundation finds that a free-trade agreement would benefit both economies. More important, it would set a precedent for other countries.

The other form of messaging that matters is to China. America and its allies should clearly communicate the cost of any use of force against Taiwan. They should let China know it will be isolated and subject to sanctions just as Russia was after its attack on Ukraine. Some say America should end its strategic ambiguity altogether and tell China it will fight for Taiwan. Others argue that greater clarity might merely heighten the risk of war. The Biden administration has chosen to let actions speak louder than words. The formation in 2021 of AUKUS, a security pact between Australia, Britain and America, was a signal of stronger military determination in the Indo-Pacific. So was the expansion of American military co-ordination with Japan and the Philippines announced earlier this year.

This special report has argued that Taiwan's own people must determine their future. But many of the actions they take on the economy, identity, politics and defence need to be bolstered by greater support from the rest of the world. Taiwan should be included in trade pacts, allowed into international institutions and given greater military and diplomatic assistance.

Taiwan endures China's economic, military, and psychological threats, as well as social fissures from its own history. This is a moment for Taiwanese democracy to prove its resilience. Its people overcame an authoritarian past. They now have to ward off an authoritarian future. They should not be left to stand alone. ■

ACKNOWLEDGMENTS A list of acknowledgments and sources is included in the online version of this special report

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Europe

Ukraine's coming counter-offensive

Lock and load

Ukraine has received a bonanza of Western arms in the past few months

On September 22nd 1941 Britain declared "tanks for Russia" week, with factories churning out armour to "repel the savage invaders". The wife of the Soviet ambassador in London christened the first tank personally: "Stalin". The first Leopard tank to arrive in Ukraine, a gift from Poland in February, has remained anonymous. But it is the vanguard of a substantial arsenal coming Ukraine's way. While all eyes are now on the battle for the eastern town of Bakhmut, attention will soon turn to an expected counter-offensive that could start as early as April.

The German-made Leopard has been at the heart of tricky debates among Ukraine's partners. On January 25th Olaf Scholz, Germany's chancellor, ended weeks of dithering by promising to send the Leopard 2A6, an advanced variant. Many thought that would unleash a torrent of donations from the dozen other European countries which operate Leopards. It has been more of a trickle. So far, the coalition has pledged just two battalions of the most modern Leopards (a Ukrainian tank battalion is supposed to have 31 tanks). Denmark, Germany and the Netherlands are also purchasing at least 100 older, but refurbished, Leopard 1A5s for Ukraine, making up another three battalions.

The Leopards are being supplemented with a motley collection of other tanks. Britain is sending a company of 14 Challenger 2s. America has promised 31 M1A2 Abrams, the most advanced tanks in its arsenal, though it looks likely that they will not arrive for months. Poland, which has promised 14 Leopards and has already sent around 250 Soviet-designed T-72 tanks to Ukraine, will send 60 modernised T-72s. A variety of infantry fighting vehicles, from the ageing Soviet-era BMP-1 to America's Stryker and Bradley vehicles, will pad out the armoured brigades.

Yet the fixation on tanks has distracted from a more important shift in strategy. In December America and Britain realised that a protracted war was not in the West's interests. Russia, moreover, was even weaker than previously thought. The mood, says one official involved in those discussions, was: "If we want something to change, we need to change something." The turning-point came on January 20th at the eighth meeting of the Ukraine Defence Contact Group, an American-led meeting of defence ministers held roughly monthly at a big American air base at Ramstein in Germany. There, allies agreed to equip Ukraine with more than a division's worth of kit, with the aim of having much of it in place by the end of March.

The flow of arms has accordingly turned from a trickle to a flood. Of all the military aid pledged by the Pentagon since the war began, 40%—costing over $8bn—has come in the three months since December 9th (see chart). One European defence official says that the infusion of arms agreed on in Germany in January alone

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amounts to two-thirds of the total sent to Ukraine in all of 2022. Most of the donations are not as sexy as tanks, but are still crucial—the latest American package includes armoured bridge-laying vehicles, for instance, which would be vital for any offensive in the south or east.

Ukraine's army is being transformed as a result. The bulk of its hardware is still of Soviet origin. But whereas the ratio of Soviet-standard to Western kit stood at five to one at the end of last year, that is expected to fall to five to two as the aid flows in. In other words, almost a third of Ukraine's army will soon have NATO-standard equipment. General Valery Zaluzhny, Ukraine's top officer, hopes that he will eventually have three new army corps at his disposal, each with six brigades, and each comprising more than 20,000 men.

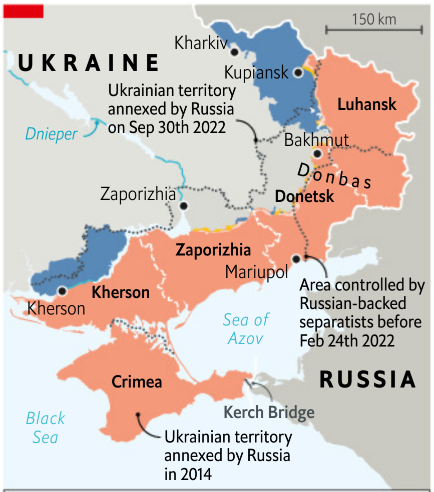
A Russian offensive that began in late January was intended, in part, to force Ukraine to commit these reserves, thereby making it much harder to mount a counter-offensive. In recent days, Russian soldiers and mercenaries have advanced deeper into Bakhmut, a town in Donetsk province that has been under Russian assault since last summer. But the battle for the town has resulted in far greater Russian losses than Ukrainian ones. And, more important, General Zaluzhny has avoided the obvious trap.

Instead of throwing sizeable reserves into Bakhmut to save the town, which is of far greater symbolic than military value, he has sent troops abroad to train on the new equipment. Since January America's 7th Army Training Command has been running a five-week course for Ukrainian units at its Grafenwoehr training area in eastern Bavaria, in Germany. During its offensives last year, Ukraine's army largely attacked in company-sized formations. The training in Grafenwoehr is intended to bring these together into bigger battalions and brigades capable of waging "combined-arms" warfare, in which infantry, armour, artillery and other combat arms work together rather than just sequentially—as is mostly the case now.

Western officials are divided on whether all this will be enough to eject Russia from the roughly 18% of Ukraine it controls at present. Only a battalion's worth of soldiers will pass through Grafenwoehr each month; a large proportion of Ukraine's army is still made up of mobilised men with limited experience. Ammunition remains a serious problem, because Western allies have been slow to ramp up production. And Ukraine's lack of air power may become a bigger issue if Russian warplanes prove willing to run bigger risks during any Ukrainian offensive.

On the other hand, Russia's army is in dire shape. If, after conquering Bakhmut, it decides to plough on deeper into Donetsk, it will have to run down its own meagre reserves even more. It might eventually start pulling units from other parts of the long front line, creating gaps that Ukraine can exploit, suggests Gustav Gressel of the European Council on Foreign Relations, a think-tank. Ukraine's allies are watching closely for weak points.

On March 2nd, Mark Milley, America's top general, visited tabletop wargames held by America at a base in Wiesbaden, Germany, to help Ukrainian officers consider different options for an offensive. Few think that Ukraine can restore its pre-war boundaries at a single stroke, let alone take back territory, including Crimea, seized by Russia in 2014. But if Ukraine can tear another significant chunk out of Russian-occupied territory, as it did last year in the north-east around Kharkiv, and in the south around Kherson, it would quash the belief—expressed by General Milley, among others—that the war is doomed to stalemate. ■


150 km
UKRAINE
Kharkiv
Kupiansk
Luhansk
Ukrainian territory annexed by Russia on Sep 30th 2022
Dnieper
Bakhmut
Donbas
Zaporizhia
Donetsk
Zaporizhia
Mariupol
Kherson
Kherson
Area controlled by Russian-backed separatists before Feb 24th 2022
Sea of Azov
RUSSIA
Crimea
Kerch Bridge
Black Sea
Ukrainian territory annexed by Russia in 2014

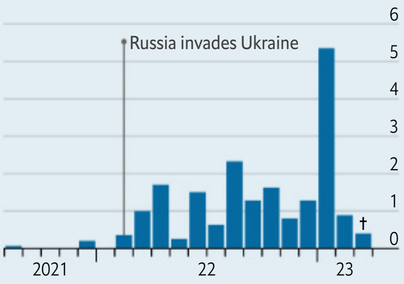
March 8th 2023

- 🟧 Assessed as Russian-controlled
- ▫ Assessed Russian operations*
- 🟨 Claimed as Russian-controlled
- 🟦 Approximate Ukrainian advance

*Russia operated in or attacked, but does not control
Sources: Institute for the Study of War; AEI's Critical Threats Project

Saddling up

United States, military assistance* to Ukraine, $bn



*Presidential drawdown of security assistance, excludes other assistance †To March 6th
Sources: US Congress; US Department of Defence

French strikes

War of attrition

PARIS

Strikes harden against pension reform

A ROLLING NATIONAL strike, launched on March 7th and in its third day as *The Economist* went to press on March 9th, will "bring the economy to its knees", declared one union leader. With nearly 1.3m protesters on the streets across France on day one, a third of classrooms shut, and sporadic illegal power cuts, the country's trade unions are engaged in a stand-off with the government over pension reform that is approaching its finale. The deadline set for parliament to examine President Emmanuel Macron's legislation is March 26th. The unions, which are renewing their strike every day, want him to back down and shelve the plan before that.

The centrepiece of the reform is a rise in the minimum pension age from 62 years to 64, and an accelerated increase in the required number of annual contributions from 41 years to 43 to qualify for a full pension. As every French leader who has ever tried to delay its citizens' retirement knows, pension reform is a tinderbox. This time, hostility has hardened as the protests go on. Turnout on the streets on March 7th was slightly higher than the previous record, on January 31st. Two-thirds of the French still say that they want the government to shelve its plan, just as they did at the start of the year.

Olivier Dussopt, the pensions minister, who came to Mr Macron's centrist movement from the Socialist Party, has patiently tried to explain why an ageing population and generous retirement scheme mean that something has to give. By 2030 the annual deficit in the pension regime will reach €14bn ($15bn) unless the rules are changed. He and the prime minister, Elisabeth Borne, have engaged in weeks of discussions, and made various concessions, to try to secure parliamentary support. But Mr Macron lost his majority in the National Assembly last year. The centre-right Republicans, whose votes he needs, have been playing hardball—even though they themselves raised the retirement age when in government in the past.

In the National Assembly the debate has become toxic. Jean-Luc Mélenchon's Unsubmissive France, which leads NUPES, a left-wing parliamentary alliance that is the biggest opposition group, has been on a wrecking mission. It originally tabled some 13,000 amendments in order to hold up proceedings and block a first vote in the lower house on the article to increase the ▸▸

pension age. Mr Mélenchon now wants Mr Macron to dissolve parliament or hold a referendum. The president, he says, is imposing an unfair reform "against the will of the people".

France's inability to conduct a serious debate about pension reform does not bode well. Neither side is in any mood to budge. Mr Macron and his government have failed to persuade public opinion of the merits of their reform, even though it keeps in place a generous system, is less radical than the one he originally proposed and shelved due to covid-19, and was in his election manifesto last year.

If the government cannot scrape the votes together in time, it can still resort to a constitutional provision that would force the reform through. This would get the new rules onto the statute books. But such an option would carry risks of its own. Not only would it prompt claims from the opposition that the government is abusing its power; it could also provoke fresh legislative elections. ■

Turkey

Turning the tables

ISTANBUL

The opposition has picked its man

It took them long enough. On March 6th, with fewer than 70 days left before the expected date of Turkey's presidential and parliamentary elections, a group of six opposition party leaders, known collectively as the Nation Alliance or the Table of Six, unveiled Kemal Kilicdaroglu, the head of the Republican People's Party (CHP), as their presidential candidate. The atmosphere outside the Ankara headquarters of the Felicity Party, where the meeting took place, was hardly electric. As Mr Kilicdaroglu spoke, his political allies looked on with stony faces. Meral Aksener, the head of the Iyi ("Good") party, the second-biggest group in the alliance, looked as if she had swallowed a bar of soap.

Mr Kilicdaroglu's nomination, expected to be a formality, became a drama. On March 3rd, a day after opposition leaders confirmed they had settled on a candidate, Mrs Aksener suddenly walked away from the Table of Six, said she refused to back Mr Kilicdaroglu, and called on Ekrem Imamoglu and Mansur Yavas, the CHP mayors of Istanbul and Ankara, to throw their hats in the ring. Choosing between Turkey's current president, Recep Tayyip Erdogan, and Mr Kilicdaroglu was choosing "between death and malaria", she said. She caved in at the 11th hour, after the CHP leader promised to appoint the two mayors as his vice-presidents. Turkey's vice-presidency, however, does not count for much.

Mrs Aksener's misgivings about Mr Kilicdaroglu are not entirely misplaced. For an opposition committed to dismantling Mr Erdogan's executive presidency, a byword for one-man rule, and to cooling down tensions at home and abroad, the unassuming CHP leader, less rabble-rouser than paper-pusher, may be the best possible president. But he may also be the worst possible candidate. Polls in the past year have suggested that both Mr Yavas and Mr Imamoglu would stand a much better chance of unseating Mr Erdogan in the presidential election run-off.

Mrs Aksener's botched power play, however, has damaged not only her own standing with voters but also the opposition's collective image. Her walkout reminded many Turks of the 1990s, when squabbling politicians brought down one coalition government after another. Mr Erdogan is sure to spend the next two months jogging their memories.

But he will need to do more than that to beat Mr Kilicdaroglu. Slowing growth and 55% inflation have nibbled away at support for Turkey's leader and his governing coalition, made up of the Justice and Development (AK) and Nationalist Movement (MHP) parties. The government also came under fire over its slow response to last month's earthquakes that killed over 52,000 people in southern Turkey and Syria. Rescue teams took days to reach major cities, condemning countless survivors to die under the rubble. Anger also mounted after Turkey's Red Crescent was revealed to have sold thousands of tents to a charity, instead of distributing them free. Mr Kilicdaroglu seems to have seized the momentum. Turkiye Raporu, a polling company, sees him leading Mr Erdogan by a margin of up to eight points. ■

The man to beat Erdogan?

Estonia

The centre holds

TALLINN

Ukraine's toughest backer wins big

Estonia's general election on March 5th was, in large part, a referendum on Estonia's support for Ukraine. Kaja Kallas, the prime minister, has become the face of eastern EU members' resistance to Russian aggression. She began sounding an alarm over the looming invasion of Ukraine in late 2021, when many European leaders doubted it would happen. She has since made tiny Estonia the biggest military donor to Ukraine relative to its GDP, and her proposal for a joint European ammunition fund has been picked up by the EU's heavyweights. Foreign publications call her "Europe's new iron lady".

Yet that nickname sits oddly on Ms Kallas, an informal and self-deprecating politician who often says the worst advice she ever got was to act more like a man. Until recently she struggled to emerge from the shadow of her father, who was prime minister in 2002-03. The war has changed that: she is now the most popular politician in the country. When the balloting ended, her Reform Party had taken 31% of the vote and 37 seats out of 101 in the Riigikogu, Estonia's parliament.

Ms Kallas's win was a triumph for Estonian liberalism. In the early 2000s, Reform Party governments gave the country a reputation for transparent, technocratic governance. But in recent years the party has faced competition from the populist EKRE party, Estonia's edition of Europe's ubiquitous Eurosceptic, anti-immigrant, anti-gay, covid- and climate-change-denying outfits. One poll published just before the election showed EKRE in first place. That threat seems to have motivated Reform's supporters: in all, a record 615,009 votes were cast, a turnout of 63.5%. In the end EKRE got just 16% and 17 seats in parliament, two fewer than in the previous election in 2019. The Centre Party, an older populist group supported by most of Estonia's ethnic Russian voters, finished third with 15% and 16 seats.

Ms Kallas's next task is to build a new governing coalition. Whatever arrangement she chooses, she is now the dominant figure in Estonian politics. For those wondering whether support for Ukraine can weather economic hardship, the answer is that in the corner of Europe closest to Russia, it turns out to be good politics.

Russian demography

The disappeared

Russia's population nightmare is going to get even worse

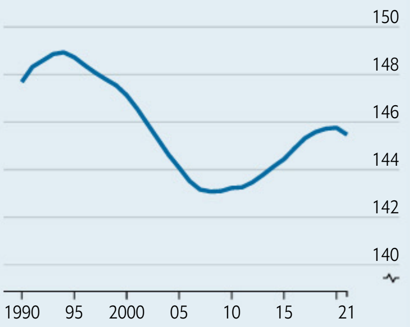
A DEMOGRAPHIC TRAGEDY is unfolding in Russia. Over the past three years the country has lost around 2m more people than it would ordinarily have done, as a result of war, disease and exodus. The life expectancy of Russian males aged 15 fell by almost five years, to the same level as in Haiti. The number of Russians born in April 2022 was no higher than it had been in the months of Hitler's occupation. And because so many men of fighting age are dead or in exile, women now outnumber men by at least 10m.

War is not the sole—or even the main—cause of these troubles, but it has made them all worse. According to Western estimates, 175,000-250,000 Russian soldiers have been killed or wounded in the past year (Russia's figures are lower). Somewhere between 500,000 and 1m mostly young, educated people have evaded the meat-grinder by fleeing abroad. Even if Russia had no other demographic problems, losing so many in such a short time would be painful. As it is, the losses of war are placing more burdens on a shrinking, ailing population. Russia may be entering a doom loop of demographic decline.

The roots of Russia's crisis go back 30 years. The country reached peak population in 1994, with 149m people. The total has since zig-zagged downwards. It was 145m in 2021 (that figure, from the UN, excludes the 2.4m people of Crimea, which Russia seized in 2014 and incorporated into its national accounts). According to UN projections, the total could be just 120m in 50 years, if current patterns persist. That would make Russia the 15th-most-populous country in the world, down from sixth in 1995. According to Alexei Raksha, an independent demographer who used to work for the state statistics service, if you look just at peacetime years, the number of births registered in April 2022 was the lowest since the 18th century. April was a particularly cruel month, but it was a revealing glimpse of a chronic problem.

Back down

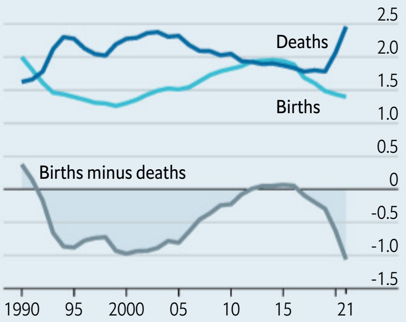
Russia, population, m



Source: UN Population Division

Birth dearth

Russia, population, m



Source: UN Population Division

Population decline is not unique to Russia: most post-communist states have seen dips, though not like this. Their declines have been slow but also manageable. Russia's population in recent decades has seen a precipitous slump, then a partial recovery (thanks to a period of high immigration from parts of the ex-Soviet Union and more generous child allowances after 2007), followed by a renewed fall.

According to the state statistics agency, in 2020 and 2021 combined the country's population declined by 1.3m; deaths outstripped births by 1.7m. (The UN also shows a fall, but it is shallower.) The decline was largest among ethnic Russians, whose number, the census of 2021 said, fell by 5.4m in 2010-21. Their share of the population fell from 78% to 72%. So much for Mr Putin's boast to be expanding the *Russki mir* (Russian world).

All this began before the war and reflects Russia's appalling covid pandemic. The official death toll from the disease was 388,091, which would be relatively low; but *The Economist* estimates total excess deaths in 2020-23 at between 1.2m and 1.6m. That would be comparable to the number in China and the United States, which have much larger populations. Russia may have had the largest covid death toll in the world after India, and the highest mortality rate of all, with 850-1,100 deaths per 100,000 people.

If you add pandemic mortality to the casualties of war and the flight from mobilisation, Russia lost between 1.9m and 2.8m people in 2020-23 on top of its normal demographic deterioration. That would be even worse than during the disastrous early 2000s, when the population was falling by roughly half a million a year.

What might that mean for Russia's future? Demography is not always destiny; and Russia did for a while begin to reverse its decline in the mid-2010s. The impact of population change is often complex, as Russia's military mobilisation shows. The decline in the number of ethnic Russians of call-up age (which is being raised from 18-27 to 21-30) will make it harder for the armed forces to carry out the regular spring draft, which begins in April.

Such complications notwithstanding, the overall effect of demographic decline will be to change Russia profoundly—and for the worse. Most countries which have suffered population falls have managed to avoid big social upheavals. Russia may be different. Its population is falling unusually fast and may drop to 130m by mid-century. The decline is associated with increased misery: the life expectancy at birth of Russian males plummeted from 68.8 in 2019 to 64.2 in 2021, partly because of covid, partly from alcohol-related disease. Russian men now die six years earlier than men in Bangladesh and 18 years earlier than men in Japan.

And Russia may not achieve what enables other countries to grow richer as they age: high and rising levels of education. Nicholas Eberstadt, a demographer at the American Enterprise Institute in Washington, argues that the country presents a peculiar combination of third-world mortality and first-world education. It has some of the highest rates of educational attainment among over-25s in the world. But the exodus of well-educated young people is eroding this advantage. According to the communications ministry, 10% of IT workers left the country in 2022. Many were young men. Their flight is further skewing Russia's unbalanced sex ratio, which in 2021 meant there were 121 females older than 18 for every 100 males.

The demographic doom loop has not, it appears, diminished Mr Putin's craving for conquest. But it is rapidly making Russia a smaller, worse-educated and poorer country, from which young people flee and where men die in their 60s. The invasion has been a human catastrophe—and not only for Ukrainians. ■

Award We are proud to report that Wendell Steavenson, who has been reporting from Ukraine for our *1843* magazine as well as for the weekly newspaper, has been recognised as Feature Writer of the Year at this year's British Press Awards.

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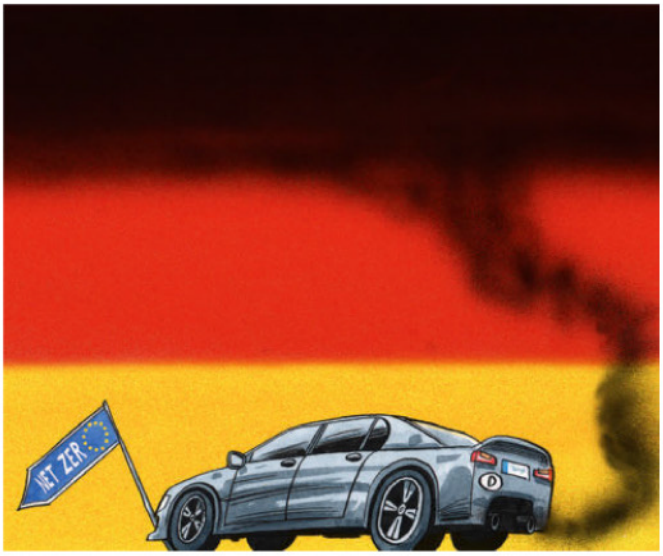
Charlemagne | Infernal combustion politics

Germany is letting a domestic squabble pollute Europe's green ambitions



For an internal-combustion engine to keep chugging along requires hundreds of parts to move in perfect unison: just one component misfiring can blow the whole thing up. Much the same is true of the process to create new EU laws, a human creation whose inner workings rival the complexity of a car motor. Nobody knows this better than Germany, present at the birth of both the automobile and the EU. And yet. A clumsy attempt to scupper new European legislation at the last minute—on scrapping the sale of new internal-combustion cars by 2035, as it happens—has left fellow EU members seething. Not for the first time, the German chancellor, Olaf Scholz, is accused of putting domestic political convenience ahead of the European interest.

This month would have marked something of a public-relations triumph for the EU's regulatory machine. Seldom do laws agreed in Brussels—by 27 member states, the European Commission and 705 MEPs—draw much interest from anyone beyond lobbyists and a few Twitter obsessives. The banning of the internal-combustion engine was such a case. It points to Europe taking tangible steps towards reaching "net zero" carbon emissions by 2050, including a 55% cut on 1990 emissions by the end of the decade. Forcing change on the powerful car industry was a feature of the law: it gave the EU credibility when it demanded that the rest of the world should also take action to combat climate change.

The self-congratulations have been delayed—or perhaps cancelled, nobody quite knows. Even Brussels insiders had assumed the internal-combustion rule had been passed months ago. Only the procedural step of ministerial signatures remained, another opportunity for politicians to take plaudits for a job well done. What should have been a mere formality has turned into a giant spanner in the works. Despite German officials having been present at every stage of the law's passage through the complex Brussels process, and having signed off time after time, Germany is now refusing to approve it. Such behaviour is just about unprecedented. Revisiting agreements once consensus has been achieved is a recipe for wrecking the EU machine, the diplomatic equivalent of pouring a glug of diesel into a petrol car.

To understand the German spanner, look to its domestic politics. Mr Scholz presides over a coalition of his Social Democrats, the Greens and the liberal Free Democrats (FDP), the smallest of the three, who hold the transport ministry. Rather oddly, its conception of liberalism includes mollycoddling incumbent carmakers, some of whom are not keen on having to scrap their polluting technologies. The FDP has been trounced in a spate of regional elections, and needs a cause to rally its base. It wants the EU to introduce an exemption for cars accepting "e-fuels", which work in petrol cars but are made with renewable energy (in tiny quantities, for now). The FDP says it wants to keep technological options open. But a loophole for e-fuels might allow Porsche, BMW and others to keep making internal-combustion engines—which owners might keep filling with carbon-spewing fuels.

At this point, European etiquette indicates that Mr Scholz should put the FDP back in its place: Germany had cut a deal with its EU partners, and that should be that. Instead, he has backed the liberals in their campaign, knowing it will cause ructions among his European allies (few in Germany seem to have noticed the spat). Having seen Berlin balk, others have been emboldened. Italy, home of a few zippy carmakers, now says it too wants the law to be revisited: it had been agreed to under the centrist Mario Draghi, but now the hard-right Giorgia Meloni reigns. Poland, also run by populists without much love for EU green rules, has come on board, as have others in central Europe. That lot may not settle for the modest commitments on e-fuels that could satisfy Germany.

The main fear in Brussels is that gauche coalition-management by Mr Scholz has resulted in the derailing of a vital EU green measure. The commission may well pull out some face-saving assurances to help him placate the FDP and still allow the law to pass. Its president, Ursula von der Leyen, is herself a former German minister, and attended a meeting of its federal cabinet last weekend. But anything beyond cosmetic changes would require a wholesale reopening of the law, complete with all those rounds of negotiations. Who knows what the outcome of that might be.

Car-buncle

This is not the first time Mr Scholz has put Germany—and coalition management—ahead of the European interest. In October a package of €200bn ($211bn) in energy bungs to insulate German firms and households from the fallout from the war in Ukraine was poorly received by other EU countries, which could not match such largesse. Central Europeans fume that Berlin has repeatedly dragged its feet when it comes to arming Ukraine. Mr Scholz's propensity to focus on domestic matters has caused the Franco-German alliance, once the reliable engine of the EU, to sputter.

The war in Ukraine triggered what Mr Scholz called a *Zeitenwende* in Germany, a change in the spirit of the times. The EU's biggest country would stop being a wallflower when it came to defence, and perhaps beyond. Far from criticising Berlin, its neighbours welcomed promises of new assertiveness. Less so now. The result has not been a dynamic new Germany at the heart of the EU, but rather one that has allowed home-grown spats to metastasise to the continental sphere. Lots of other European leaders have tricky coalitions to deal with. None scuppers important EU legislation for the sake of political expediency at home.

Grumbles about Germany and the EU are nothing new. For much of the 16 years she was in power, Angela Merkel faced barbs for the manner in which she put off making decisions until the last minute. If anything, those days are remembered fondly now: for when Mrs Merkel agreed to something, no matter how belatedly, at least she stuck to it. ■

Life expectancy

Nasty, British and short

MIDDLESBROUGH

Why did 250,000 Britons die sooner than expected?

JAMES COOK UNIVERSITY HOSPITAL in Middlesbrough, in the north-east of England, is home to a world-leading heart unit. The unit was a pioneer in primary angioplasties, in which balloons are inflated inside blocked arteries to open up the vessels. In 2016 surgeons there fitted a 71-year-old woman with a wireless pacemaker no bigger than a grain of rice—the first operation of its kind outside a clinical trial. The unit marked its 30th birthday in January with news of funding for a research lab.

But there was also a deflating sense of reality. Despite the unit's successes, cardiovascular diseases still cause around one in five premature deaths in Middlesbrough. The town of 144,000 people has some of the worst mortality rates for heart disease in England. Life expectancy at birth, a good indicator of health, has fallen slightly over the last decade, from 75.7 years to 75.4 years for men.

It is not just in Middlesbrough where life expectancy has flatlined. The latest official data end in 2020, when covid-19 was still claiming large numbers of lives. To provide a post-pandemic health assessment of Britain, *The Economist* has used provisional figures for the last two years. The result is disturbing. We calculate that life expectancy in Britain in 2022 was 81 years for boys and girls combined, just eight weeks longer than a decade ago.

That is an astonishing slowdown in the rate of progress. Between 1980 and 2011 life expectancy was rising steadily, at an average pace of close to three months per year. Had that rate of improvement been maintained over the last decade, Britons' life expectancy at birth in 2022 would be 83.2 years. A difference of 2.2 years, the equivalent of 26 months, may not sound like much. But to demographers it is colossal. Life expectancy declines when people die earlier. Between 2012 and 2022, 26 months of lost life expectancy equates to roughly 700,000 more deaths in Britain than might have been expected in the early 2010s.

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There are caveats to these figures. First, our life-expectancy estimate for 2022 is based on provisional death figures using population projections that have not yet incorporated changes from the 2021 census. These are the best data available for now. Second, starting-points matter: a life expectancy of 83.2 years would have represented the best possible scenario for Britain, one in which long-run gains continued unabated from 2011. But since progress started to stall in the early 2010s, it is a natural moment to choose.

Finally, to convert life expectancy to absolute numbers of deaths we have made a simplifying assumption that gains and losses in life expectancy reflect death rates which change proportionally among all age groups. In practice, death rates can rise and fall at differential rates across the population: the elderly were more at risk from covid-19, for example.

Yet such caveats cannot obscure the fact that something has gone badly wrong in the past decade, and that large numbers of Britons have lived shorter lives as a result. That raises two big questions. How much of this is specific to Britain? And why?

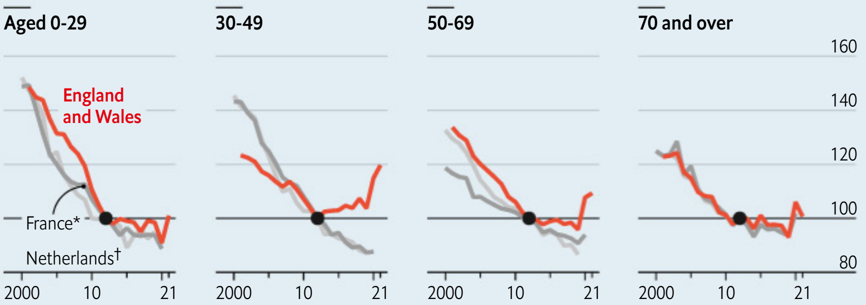
Some things are common to all countries. The pandemic is an obvious example. Covid killed millions around the world in 2020 and 2021, meaning that life expectancy was especially bad in those years. But deeper trends are also at work. For almost

▸▸

two centuries the story of life expectancy in the rich world had been one of unfettered progress. In 1841 a baby boy born in England or Wales could expect to live to the age of 40, and a girl to 42. By the 20th century's end, life expectancy had nearly doubled; in the first decade of the new millennium, improvements even sped up. "2000-2010 was a halcyon decade for life expectancy," notes Veena Raleigh of The King's Fund, a think-tank.

Not too young to die

Age-standardised mortality rates by age groups, 2012=100



Sources: Office for National Statistics; Human Mortality Database; *The Economist*

*To 2020 †To 2019

The slowdown that occurred in the next decade may have been an inevitable comedown from the preceding period, given the mortality rates associated with ageing populations. Deaths from Parkinson's disease and Alzheimer's are increasing, often in conjunction with respiratory disease, especially flu and pneumonia. Medical interventions have kept sicker people alive for longer, but may be finding their limits.

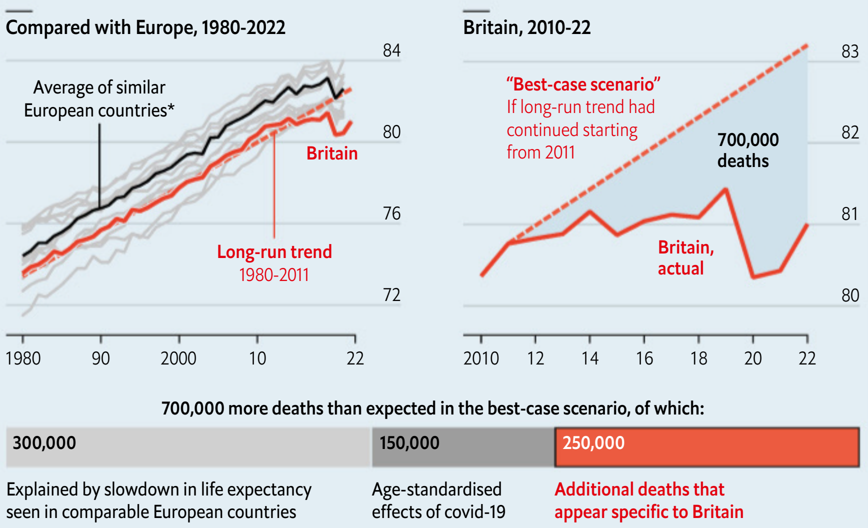
Take cardiovascular disease, which for the past half a century contributed the largest gains to life expectancy in rich countries. Those who survive heart attacks are at greater risk of developing valvular heart disease, which if untreated can result in heart failure. "So while we've seen heart-attack deaths going down, we've actually seen the numbers of cases of heart failure and heart-failure deaths going up," says Mike Stewart, chief medical officer at James Cook. "You can postpone [the effects of heart disease] but you can't get rid of it."

As you might expect, such longer-run slowdowns in life expectancy are also observable in other European countries. But none has stalled quite so much as Britain (see chart 1). To create an international benchmark we selected a dozen rich European countries that share similar demographic and economic attributes with Britain. We excluded Germany, because reunification in 1991 had specific effects on life expectancy. We also did not include outliers such as America, whose dreadful performance reflects an opioid epidemic, or East Asian countries such as Japan and South Korea, whose gains in life expectancy make them stand out for better reasons.

Improvements in life expectancy among our 12 European countries slowed from an additional 12 weeks per year on average between 1980 and 2011 to seven weeks per year from 2011 until the start of the pandemic. But they slowed much more dramatically in Britain. The international slowdown in comparable countries, adjusting for covid, explains only about 300,000 of the additional 700,000 British deaths in the 11 years to 2022.

Breathtaking

Life expectancy at birth, years



*Population-weighted average of Austria, Belgium, Denmark, Finland, France, Italy, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland

Sources: ONS; National Records of Scotland; Northern Ireland Statistics and Research Agency; Public Health England; OECD; *The Economist*

Strip out the age-standardised deaths associated with the pandemic too, and around 250,000 of the 700,000 deaths remain to be explained. Around a quarter of a million people, almost two whole Middlesbroughs, have died sooner than expected in little more than a decade. Why?

To answer that, you have to look not just at how many are dying, but at who. It is not just the elderly: improvements in life expectancy have slowed across all age groups. Between end-2019 and mid-2022 Britain had the 19th-highest cumulative excess-mortality rate of 33 European countries for the over-65s, but the fifth-highest among those who died younger.

This fits with a "worrying trend" of more 50- to 64-year-olds dying than would otherwise be expected in 2022, notes Dr Jonathan Pearson-Stuttard of LCP Health Analytics, a consultancy. Many probably succumbed to heart disease, diabetes and liver problems, which were leading causes of excess deaths in 2022. Some of these deaths may have been caused by interrupted health care during the pandemic. But for those aged between 40 and 64, death rates for cardiovascular disease were increasing well before covid struck.

In England and Wales mortality rates among 30- to 49-year-olds have steadily increased since 2012, in sharp contrast with neighbouring countries such as the Netherlands and France (see chart 2); the same applies to mortality rates for men between the ages of 49 and 54. Deaths at younger ages are less easily explained by demography or the limits of medical advances; other factors are at work. Obesity, for example, is associated with increased mortality for cardiovascular diseases and cancer; obesity rates have risen faster in Britain than in most other rich countries.

As for where people are dying, the uncomfortable truth is that the 250,000 do not die in places like the London borough of Westminster (where life expectancy surpasses that in the Swiss canton of Geneva). They die in poorer towns and cities.

A government press release in 2021 ,to mark the creation of an Office for Health Improvement and Disparities, acknowledged that around 80% of a person's long-term health is determined not by the care they receive but by wider social factors. Cold, damp homes can increase the risk of developing heart and respiratory diseases. A low income or a limited education can worsen the choices a person makes about their diet. Poor people sometimes use food, drugs and gambling as an escape.

"Deaths of despair", from drugs, suicides, accidents and alcohol, play a particular role in Scotland. Death rates from drug misuse are around 3.7 times higher there than in Britain as a whole, making them comparable to opioid-ravaged America. Within Scotland, they are 18 times higher in the poorest 20% of neighbourhoods than the richest. Drug overdoses have been second only to covid-19 as the biggest contributor to rising mortality rates in Scotland over the last four years.

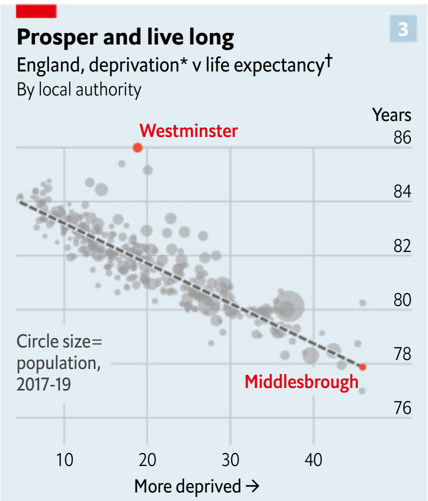
Drug-and-alcohol-related deaths have been rising south of the border too, and are the main reason for the alarming rise in death rates among people in their 30s and 40s. But in England "deaths of despair" only explain about one sixth of the life-expectancy gap between the richest 20% and poorest 20% of neighbourhoods.

Outside London, there is almost a perfect correlation between life expectancy in a local authority and its level of deprivation—as measured by a government index of a battery of economic and other factors (see chart 3). Our calculations also suggest that between 2001 and 2016 income and employment deprivation alone accounted for 83% of the variation between local authorities in life expectancy.

In 2020 Sir Michael Marmot, an epidemiologist, published a follow-up to an influential report from 2010 into health disparities across England. He found that, whereas in London life expectancy had improved across all income deciles, in the years between 2011 and 2017 life expectancy had declined for women living in the poorest decile of areas, and for the men living in the poorest parts of the north-east and Yorkshire. A poor English girl could on average expect to live 7.7 years less than a rich girl, and a boy 9.5 years less.

If working-age and poorer people are at the heart of a decade of British deaths, many forces will have been at play, some of them overlapping. But funding cuts, reduced public-health interventions and problems in the National Health Service (NHS) all are likely to have played a part.

For many the connection between slowing life expectancy and austerity is increasingly clear. "It's all down to the weight of evidence," argues David Walsh of the Glasgow Centre for Population Health. On this view, funding cuts in other European countries during the 2010s help explain some of their slowdowns, and Britain's worse performance reflects the particular brand of austerity enacted by the coalition government that was in power from 2010 to 2015.



Prosper and live long 3

England, deprivation* v life expectancy†

By local authority

*A measure of deprivation in England weighted by: income (33%), employment (33%), education (20%) and crime (14%). Data collection in 2015-16
†Life expectancy over three-year period: 2017-19

Sources: ONS; Department for Levelling Up, Housing & Communities; *The Economist*

Reductions in government funding then tended to hit the most deprived areas hardest. During the 2010s, spending per person decreased by 16% in the richest councils, but by 31% in the poorest. Benefits were also cut. Our analysis of a detailed dataset of local government spending from 2009-19, compiled by the Institute of Fiscal Studies, a think-tank, shows that places with the largest relative declines in adult social-care spending and housing services were the ones that suffered the greatest headwinds to life expectancy.

The connection of austerity with life expectancy is controversial—correlation does not necessarily mean causation. But there is at least one specific way in which funding cuts are likely to have worsened health outcomes. Statistical boffins define preventable deaths as those which could have been avoided with public-health interventions such as improving health education or helping people to stop smoking, say, or manage their weight.

These interventions are not easy to get right but they can be very effective. A study looking at coronary heart-disease deaths in England and Wales between 1981 and 2000 found that this kind of primary prevention avoided four times as many deaths as secondary prevention did, and that the average person saved gained almost three times as many years of additional life (21 years compared with 7.5). Experts reckon that 40% of the burden on the NHS may be preventable through tackling the causes of avoidable chronic conditions. But in 2020 less than 7% of overall government healthcare spending went on prevention, a third of that on covid testing and tracing.

Such services have been pruned in the last decade. Since 2013 public health in England has come under the purview of local authorities. The public-health grant, which is paid to councils by the Department of Health, was cut by 24% in real terms per person between 2015-16 and 2021-22; the government is yet to publish its allocation for 2023-24, making it hard to plan. Public-service agreements committing the previous Labour government to tough targets on life expectancy, among others, were discontinued in 2010. "From our heart-disease point of view, I think we were doing public-health intervention better 20 years ago," says Dr Stewart.

There is no substitute for stopping people from falling ill in the first place. But once a disease is present, secondary prevention with treatments such as statins and cardiac rehabilitation can do much to reduce mortality rates. That is where shortfalls in medical care are liable to show up. Britain had higher rates of treatable mortality (deaths which could have been avoided with timely and effective healthcare interventions) than the OECD median country long before the waiting lists started to spiral. This is partly because the poorest tend to present to health services later, when their conditions are more advanced.

Sorting out these problems is not a quick or easy task. But it is an urgent one. Back in Middlesbrough, the gap in life expectancy between the richest and poorest fifth of the population is 11.3 years for men and 8.8 years for women. This discrepancy is something that Kevin Leavesley, who officiates at 300-350 funerals a year across the north-east, sees all too often. "If I'm doing a funeral in east Middlesbrough then it is less of a surprise when it's a 62-year-old," he says. Some 10m years of life have been lost in Britain over the past decade, compared with what might have been expected in 2011. That grim total keeps ticking up. ■

Bagehot | This sceptred aisle

The story of British politics is once again the story of the supermarket

There is no museum to Margaret Thatcher. There is no need for one, given the Sainsbury's supermarket on the high street in Finchley, her former constituency. She opened it on March 16th 1987, inspecting the sausages, zapping cans at the till and delivering a sermon to its employees. "The market economy isn't some theory—it is, in fact, men and women being able to spend their own earnings in the place of their choice, in shops like these."

The supermarket is the best way to understand Thatcher and her creed. Her father had been a greengrocer. As a young Conservative candidate, she preached fiscal discipline through the analogy of a housewife managing the shopping budget. When she was drawing up an agenda for privatisation as leader of the opposition, she would often compare the cut-throat competition between Tesco and Sainsbury's with sluggish state-owned industries. In the cold war the supermarket meant freedom itself: to know the difference between our systems, she would say, compare the sparse stores of Moscow with the abundance of an Asda.

Thatcher's pocketbook politics has been out of fashion for a while. Brexit, the pandemic and internal party convulsions crowded out more quotidian worries such as the price of sausages. In the wake of Boris Johnson's victory in 2019, Conservative intellectuals declared that culture had vanquished economics. "It's not the economy, stupid", ran one headline. Economics had other ideas. The supermarket is again at the centre of British politics. It is the site of Rishi Sunak's biggest achievement and worst headaches. What happens at the tills will shape his premiership.

Politicians like supermarkets partly because their store-card data and consumer panels produce a picture of the electorate that is more sophisticated than anything political parties can draw. "They'd invariably come to me first at the start of the meeting and say 'What's going on out there?'" says Justin King, a former CEO of Sainsbury's and a member of David Cameron's business council.

What's going on out there is brutal. In the year before Mr Cameron's surprise victory in 2015, food prices consistently fell as discounters entered the market. Now, all has changed. Food prices rose by 17% in the year to January, as the war in Ukraine drove up the cost of grain, energy and cooking oil. Shoppers tend to change their habits when inflation hits 4%, says Fraser McKevitt of Kantar, a consultancy, shifting from big brands to own labels and from fancy lines to budget products. A price war is under way. Ocado, a posh online grocer, promises to match Tesco's prices; Tesco and Sainsbury's promise to match those of Aldi, a discounter.

Mr Sunak realises the dangers. He has made halving inflation by the end of the year his priority. (Unlike Liz Truss, he correctly remembers Thatcherism as a project to curb inflation first and cut taxes second.) He is likely to succeed in that aim, but its pursuit makes for miserable politics: there is little to do except sit tight and not spend money. Nor will he be thanked. Of 36 countries surveyed by Ipsos, a pollster, British voters are the most likely to blame their government for inflation. History suggests that economic competence is decisive in general elections, and that once a party loses its lead in this area, as the Tories did under Ms Truss, it can take years to claw it back. The feedback from government focus groups is bleak: participants go around the table comparing the price of cheese and milk.

The scruffy Finchley store testifies to the straitened times. The aisles are adorned with banners: "GREAT PRICES"; "SPECIAL OFFERS"; "£2 AND UNDER". There are large gaps where the celery and tomatoes should be. The return of inflation would dismay Thatcher. But what would distress her more is that parts of her party seem to view supermarkets differently now. She saw the clockwork beauty in the supply chain: her archives contain a note in which she has underlined how one store had tweaked its truck axles to increase load capacity. She asked Roy Griffiths, a Sainsbury's director, to fix the management of the National Health Service.

But a wing of the Tory party that calls itself Thatcherite has treated the supermarkets' just-in-time distribution network much as a toddler with a hammer treats a wristwatch. Brexit has been painful for an industry whose business model was built around seamless borders, the free movement of hauliers and a fluid labour force. It will get worse if and when full import controls are finally imposed next year.

Suspicion seems to have replaced admiration. Andrew Davies, the leader of the Welsh Conservatives, this month mocked an opponent who lamented a shortage of greens as a "metropolitan liberal"; the triumph of the 1980s had been to bring metropolitan tastes to provincial tables. Ministers have responded to the dearth of fresh vegetables, which is largely due to high energy costs, by summoning retailers for a reprimand. In response, some retailers are refusing to share their data on shortages. "There is a lack of genuine respect for the depth of complexity this [industry] involves," says one supermarket boss.

The aisles have it

It often seems that the more the Conservative Party tries to imitate Thatcher, the less well she is remembered. The aesthetics of confrontation and upheaval are easy to mimic. The strategic patience and love of the consumer are often neglected. Mr Sunak, at least, seems to get this and it is in the supermarket that his greatest achievement is found. At the core of his revamped agreement with the EU on Northern Ireland is a customs fix for supermarkets, an attempt to reconcile the constitutional revolution of Brexit with the simple wish of folk in Belfast to buy shepherd's pie and microwavable lasagne as easily as residents of Blackpool can. Supermarket bosses have been impressed by the prime minister's grasp of the technicalities. "He was the first person who really, really got into it in any detail," says one. That is far from a guarantor of political success. But in miserable times it is an essential start. ■

China Inc in the West

Seizing the moment

SHANGHAI

A Chinese CEO's guide to doing business amid anti-China sentiment

American-football fans watching the Super Bowl last month in the sport's heartland were treated to a surprising TV commercial. In it, a woman switched magically between chic but cheap outfits as she scrolled through a mobile-shopping app called Temu. The jingle—"I feel so rich; I feel like a billionaire"—refers to the sensation of wealth evoked by the endless choice and rock-bottom prices for Temu's clothes. Since its launch last September Temu has become America's most-downloaded app for iPhones. That is a feat for a young brand based in Boston. It is all the more impressive because Temu hails from China.

This is a critical moment for Chinese companies in the West. On the one hand, Chinese brands have never been more popular in America. Hot on Temu's heels in iPhone downloads are CapCut, a video-editor, and TikTok, a time sink. Shein, a fashion retailer, ranks above Amazon. This year it may pull off one of the world's biggest initial public offerings (IPOs) in New York.

At the same time, Western suspicions of Chinese business are mounting, together with intensifying geopolitical tensions between China and the West. America has banned Huawei, a Chinese maker of telecoms gear, at home and crushed its efforts to capture Western markets. On March 6th it was reported that Germany's government was close to forcing mobile operators to stop buying Huawei kit and to replace installed Chinese equipment. TikTok may be in for similarly harsh treatment. Several countries, led by America, are discussing full bans on TikTok over concerns about the Chinese government using the platform for anti-Western propaganda or to gobble up Western users' personal data (TikTok denies both these accusations).

For ambitious Chinese firms eyeing wealthy Western shoppers this presents a conundrum: how do you do business in places where you are increasingly unwelcome? Companies like Shein, Temu and the beleaguered TikTok are all coming up with answers that have a lot in common. Whether they pull it off will determine the fate of Chinese commerce in the West.

China Inc began making a global mark in the 1980s, as foreigners poured investments into Chinese factories which then shipped cheap goods to the West. Consumers would buy these almost exclusively through retailers such as Walmart or from Western brands that sourced products from China. Then, in the mid-2000s, Chinese firms began building a presence in foreign markets. Until Uncle Sam clipped its wings, Huawei was selling its own networking kit and handsets across the West. Other Chinese champions such as Haier, a home-appliance maker, bought and nurtured Western brands (GE's white-goods division, in Haier's case). Between 2011 and 2021 Chinese firms acquired nearly $90bn-worth of foreign retail and consumer brands, according to Refinitiv, a data company. Many of the targets were Western.

In recent years, however, the dealmaking has slowed. In 2022 Chinese compa-

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nies spent just $400m on foreign brands (see chart). The authorities in Beijing have grown warier of capital flight even as Western governments have become more hostile to such transactions, often blocking them. Chinese brands seeking to build a Western presence have had little joy. Lenovo, a Chinese firm that in 2004 acquired IBM's personal-computer division, has captured a mediocre 15% of America's PC market, far behind HP and Dell, which together control more than half of it. Xiaomi, which in 2021 overtook Apple to become to the world's second-biggest smartphone-maker, has been unable to crack America.

The latest wave of global Chinese brands has taken a different approach. Many initially eyed the domestic market, before the covid-19 pandemic and China's draconian response to it forced them to look abroad for growth, says Jim Fields, a marketer who works with Chinese brands in America. Companies such as Shein, Temu and TikTok may grab the headlines but hundreds of Chinese firms have been making similar inroads in America, Europe and Japan—using similar strategies.

The first is not to flaunt their Chineseness. *The Economist* has reviewed dozens of companies' websites and found that most could easily pass for a Western brand. Their names sound English: BettyCora produces press-on nails; Snapmakers makes 3D printers. Almost none mention their country of origin. One young entrepreneur who is currently planning the launch of his own brand in America discerns a long-standing prejudice against Chinese-made goods as being of poor quality. This perception is linked to the first wave of cheap factory wares in the 1980s. Increased hate crimes against people of Asian descent in America in recent years have not encouraged companies to come out as Chinese. Most people hoping to start such businesses will avoid references to China if possible, the entrepreneur says.

The second common characteristic is the use of technology to beat Western rivals on service and price. Many Chinese firms use their own websites and mobile apps to sell directly to customers. They thus bypass retailers while gaining access to data on consumer trends, allowing them to react quickly to shifts in demand—or, using sophisticated analytics, predict these changes and respond in advance.

This "on-demand manufacturing" has allowed Shein to triple its American sales between 2020 and 2022, to over $20bn. Its app attracts 30m monthly users in America. Hundreds of Chinese firms are experimenting with this model in the American marketplace. Halara, a newish women's-apparel retailer, gets around 1.5m digital visitors monthly to its app. Newchic, a rival, attracts 1.7m. The ability to understand customers through data analytics is a big advantage in developed markets, says Xin Cheng of Bain & Company, a consultancy.

The firms' savvy use of technology and supply chains allows them to limit their non-Chinese assets—their third shared strategy. Asset-lightness appeals to investors, says Zou Ping of 36Kr, a Chinese research firm. It helps cut costs and reduce the risk of assets being stranded should Western politicians turn the screws.

For many Chinese brands, their only Western assets are customer-facing websites and apps. Although it recently opened a distribution centre in Indiana, Shein ships most goods directly from China to buyers in America. Its Boston base notwithstanding, Temu has no warehouses in America, let alone factories (though it does not rule out storage). Naturehike, a maker of camping gear, has conquered the West and Japan without employing a single person outside China. Instead, says Wang Fangfang, a spokeswoman, it is boosting its on-demand manufacturing capacity so it can better understand customers from afar. In February CATL agreed to furnish its electric-vehicle batteries to Ford by licensing its patents to the American carmaker rather than building a factory in America.

Made in China? Who, me?

The most dramatic way in which some Chinese companies are guarding themselves against a Western backlash, as well as Communist Party meddling in their Western business, is by distancing their governance structures from China. The first big name to pursue this strategy was ByteDance, TikTok's parent company. From the start, it kept TikTok's popular Chinese sister app, Douyin, separate from the version used in the rest of the world (which in turn cannot be used in China). Then TikTok moved its headquarters to Singapore, to separate itself from decision-making at ByteDance's headquarters in Beijing. Now it reportedly wants to create an American subsidiary tasked with safeguarding the app, which would report to an outside board of directors rather than ByteDance. ByteDance, for its part, stresses it is domiciled in the Cayman Islands, not China.

Seeing that none of this has fully placated Western regulators, other Chinese companies are going further. Last year Shein also decamped to Singapore, from Guangzhou. The city-state is now its legal and operational home. Add its planned New York listing and its executives almost bristle when you call Shein Chinese. More businesses may adopt a version of this model.

The success of these strategies is hard to gauge. Export figures from China do not distinguish between Chinese brands and goods made for foreign clients. Many packages are sent by courier and not counted as exports. But it is clear that, in some areas at least, Chinese brands are taking market share in the West. Anker has become one of America's biggest purveyors of phone chargers. In 2021 about half its $1.8bn in global sales came from North America; less than 4% came from China. A few Chinese makers of smart appliances like robot vacuum cleaners rank among top global sellers alongside American and German firms. One, Roborock, had foreign sales of $500m in 2021, accounting for 58% of its total revenues, up from 14% two years earlier. America is its main market. Chinese firms such as EcoFlow are poised to dominate sales of household power banks there.

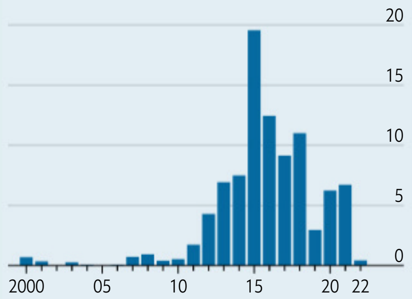
Investors are bullish. Shein's IPO could be a blockbuster. Last year Hidden Hill Capital, a Singaporean fund, raised nearly $500m with TPG, an American private-equity firm, to invest in Chinese firms backing the supply chains of future global brands. Some of the entrepreneurs behind these success stories nevertheless worry. One concern is overcoming the shabby reputation of the "Made in China" label. Today fake or shoddily made me-too items can hurt the cachet of Chinese firms that do invest in research and development. In 2021 Amazon banned 600 Chinese brands on concerns that they were churning out fake reviews of their wares.

But Chinese bosses lose most sleep over the deteriorating Sino-American relations. Many look to TikTok as the bellwether. In January the firm said it would set up a data centre in America to store local users' data and give American authorities access to its algorithms; on March 6th the *Wall Street Journal* reported that it was seeking a similar deal in Europe. Despite the assurances, bills are moving through Congress that would let President Joe Biden ban the app.

If Beijing and Washington continue to grow apart, as seems likely, American politicians may take aim at other Chinese apps. For those that collect data on shopping habits—which is to say most of the consumer-facing ones—this would turn their technological strength into a geopolitical weakness. Facing up to that threat will require a whole other level of ingenuity. ■

Crouching dragon, hidden tiger

Chinese companies, acquisitions of foreign retail and consumer brands, $bn



Source: Refinitiv

Machines and jobs

Where are all the robots?

SEOUL

The rich world suffers from too little automation, not too much

“I THINK WE might exceed a one-to-one ratio of humanoid robots to humans,” Elon Musk declared on March 1st. Coming from the self-styled technoking of Tesla, it was not so much a prediction as a promise. Mr Musk’s car company is developing one such artificially intelligent automaton, codenamed Optimus, for use at home and in the factory. His remarks, made during Tesla’s investor day, were accompanied by a video of Optimus walking around apparently unassisted.

Given that Mr Musk did not elaborate how—or when—you get from a promotional clip to an army of more than 8bn robots, this might all smack of science-fiction. But he has waded into a very real debate about the future of work. For certain forms of AI-enabled automation are fast becoming science fact.

Since November ChatGPT, an AI conversationalist, has dazzled users with its passable impression of a human interlocutor. Other “generative” AIs have been conjuring up similarly human-like texts, images and sounds by analysing reams of data on the internet. Last month the boss of IBM, a computing giant, forecast that AI will do away with much white-collar clerical work. On March 6th Microsoft announced the launch of a suite of AI “co-pilots” for workers in jobs ranging from sales and marketing to supply-chain management. Excitable observers murmur about a looming job apocalypse.

Fears over the job-displacing effects of technology are, of course, nothing new. In early 19th-century Britain, the Luddites burned factory machines. The term “automation” first rose to prominence as the adoption of wartime innovations in mechanisation sparked a wave of panic over mass joblessness in the 1950s (see chart on next page). In 1978 James Callaghan, Britain’s prime minister, greeted the breakthrough technology of his era—the microprocessor—with a government inquiry into its job-killing potential. Ten years ago Carl Frey and Michael Osborne of Oxford University published a blockbuster paper, since cited over 5,000 times, claiming that 47% of the tasks American workers perform could be automated away “over the next decade or two”. Now even the techno-optimistic Mr Musk wonders what it would mean for robots to outnumber humans: “It’s not even clear what an economy is at that point.”

Although Messrs Frey and Osborne still have a few years to be proved right, and Mr Musk can be safely ignored for the time being, the earlier fears about job-killing technology never materialised. On the contrary, labour markets across the rich world are historically tight—and getting structurally tighter as societies age (see Finance & economics section). There are currently two vacancies for every unemployed American, the highest rate on record. America’s manufacturing and hospitality sectors report labour shortages of 500,000 and 800,000 respectively (as measured by the gap between job openings and unemployed workers whose last job was in the sector in question).

Rage for the machine

The immediate problem for advanced economies is, then, not too much automation but too little. It is exacerbated by the fact that, for large businesses, automating tends to be difficult to get right in practice. And it is likely to prove no easier with the latest buzzy AIs.

Mechanical arms on a factory floor performing repetitive tasks such as welding, drilling or moving an object have been around for decades. Robot usage historically centred on the car industry, whose ▸▸

The glass-ceiling index

Gap year

Is the gender pay gap opening up again?

ON AVERAGE, WOMEN earn less than men. Much of this is because of the jobs they perform, by choice or social expectation; these are often worse-paid than typical male occupations. Some, as when women’s pay is lower for the same position, is the result of discrimination. Before the covid-19 pandemic, the gap between median male and female wages was at least edging down. *The Economist*’s glass-ceiling index of female workplace empowerment, published each year on March 8th, international women’s day, shows that this salutary trend reversed in 2021 in some of the mostly rich members of the OECD, including Britain and Canada (see chart, and economist.com/glass-ceiling for the full index).

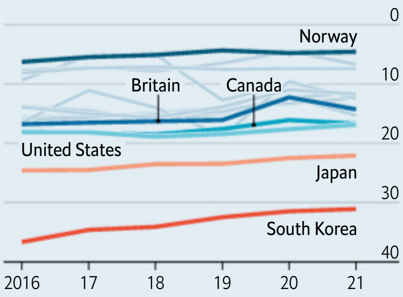
One explanation is a hangover from the pandemic. When hotels, restaurants and shops shut their doors amid lockdowns, their workers’ wages suffered disproportionately. And those workers were disproportionately women. If so, the widening pay gap may have been a blip: demand from employers in these sectors has been hot since economies began to reopen. Americans working in leisure and hospitality have seen their earnings grow faster than those toiling in more male-dominated industries such as transport over the past year or so.

The return to the pre-pandemic trend will be helped by women’s gains at the other end of the income spectrum. In 2022 the share of board members across the OECD who were women crept over 30% for the first time. MSCI now expects parity by 2038, four years earlier than previous estimates. Only 64 out of 3,000 or so big companies in the research firm’s global stock index had a female-majority board. But that was double the number in 2021 and includes giants like Citigroup and Shell. Analysis just published by Moody’s, a credit-rating agency, shows that such firms in North America have consistently higher credit ratings. Disentangling cause and effect is not easy. Empowering women ought to be.

Bucks and the trend

Median gender wage gap*, %

Selected OECD countries, inverted scale



Source: OECD

*Male minus female wages, divided by male wages

Internship We invite promising journalists and would-be journalists to apply for an internship supported by the Marjorie Deane Foundation. Successful candidates will spend three to six months with *The Economist* in London writing about business. Applicants are asked to send a covering letter and an original article of about 500 words that would be suitable for publication in the Business section. Applications should be sent to deaneintern@economist.com by April 1st.

heavy parts and large batches with limited variety are ideally suited to the machines. The electronics industry, with its need for precise but repetitive movements, was also an early adopter.

More recently the list of industries which are embracing robots has lengthened, observes Jeff Burnstein, president of the Association for Advancing Automation, an American industry group. Advances in computer vision have made machines much more dexterous, points out Sami Atiya, who runs the robotics business of ABB, a Swiss industrial firm. Lightweight "collaborative robots" now work side-by-side with human workers rather than being caged off, and autonomous vehicles ferry objects from one place to another in factories and warehouses.

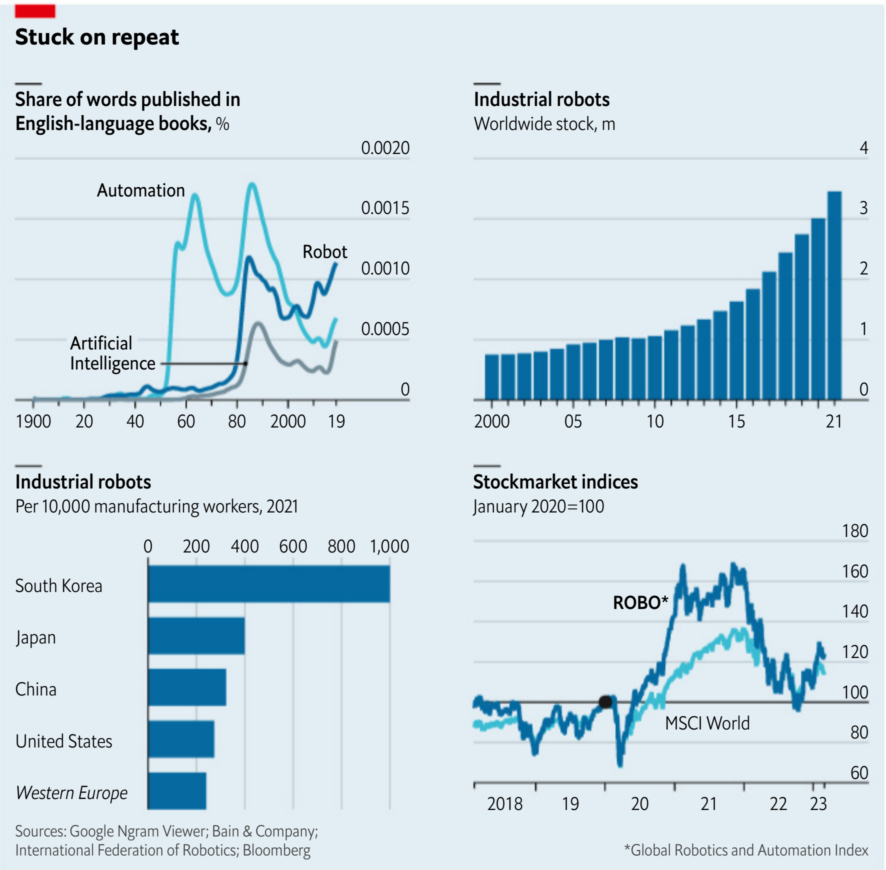
At the same time, robot prices have tumbled. The average price of an industrial robot fell from $69,000 in 2005 to $27,000 in 2017, reckons Ark Invest, an asset manager. In December ABB opened a 67,000-square-metre "mega factory" in Shanghai where robots make other robots. Installation costs have come down, too, with new "no code" systems requiring no programming skills, notes Susanne Bieller, general secretary of the International Federation of Robotics (IFR), another industry body.

As a consequence of better technology and lower prices, the global stock of industrial robots grew from 1m in 2011 to nearly 3.5m in 2021. Sales at Fanuc, a large Japanese robot-maker, rose by 17% last quarter, year on year; those of Keyence, a Japanese company that acts as an automation consultant to the world's factories, shot up by 24%. Although they are down from the frothy peaks of 2021, when chief executives sought alternatives to human workforces incapacitated by covid-19, robot-makers' share prices remain a fifth higher than before the pandemic.

Optimus not ready for prime time

For all that growth, however, absolute levels of adoption remain low, especially in the West. According to the IFR, even South Korean firms, by far the world's keenest robot-adopters, employ ten manufacturing workers for every industrial robot—a long way from Mr Musk's vision. In America, China, Europe and Japan the figure is 25-40 to one. The $25bn that, according to consultants at BCG, the world spent on industrial robots in 2020 was less than 1% of global capital expenditure (excluding the energy and mining sectors). People spent more on sex toys.

Stuck on repeat



Share of words published in English-language books, %

Industrial robots
Worldwide stock, m

Industrial robots
Per 10,000 manufacturing workers, 2021

Stockmarket indices
January 2020=100

Sources: Google Ngram Viewer; Bain & Company; International Federation of Robotics; Bloomberg

*Global Robotics and Automation Index

The long lifetimes of industrial equipment limit how quickly older, dumber machines can be replaced with cleverer new ones, observes Rainer Brehm, who runs the factory-automation unit of Siemens, a German industrial giant. And most menial jobs in advanced economies these days are anyway in the services industries, where physical tasks are harder to automate. The human body, with its joints and digits affording 244 planes of motion, is a marvel of versatility. A typical robot has six such "degrees of freedom", notes Kim Povlsen, chief executive of Universal Robots, a manufacturer of industrial robot arms.

The automation of office work has been similarly halting, for similar reasons of legacy systems and corporate inertia. In theory, digitisation should make it possible to remove most human involvement from routine tasks like ordering inventory, paying suppliers or totting up accounts.

In practice, most businesses born before the digital era use a tangle of outdated and incompatible systems, notes Cathy Tornbohm of Gartner, a research firm. Rather than shell out on IT consultants to come and untangle the thicket, many firms prefer to outsource the menial office work to low-cost countries like India or the Philippines. IDC, another research firm, puts the market for software that automates unrewarding office tedium at $20bn a year, even less than is being spent on robots of the physical variety.

Automatic for the people

In time, further innovation is likely to remove some of those obstacles. For physical robots, this is well under way in machine-mad South Korea. Doosan Robotics, one of the country's biggest robot-makers, has opened up its software to outside developers to create pre-programmed applications for its robots. These are now used for everything from making coffee to laying flooring on construction sites. Robert Chicken uses robotic arms to operate its deep fryers at its fast-food restaurants; to keep upfront investment for franchisees down, the company rents the robots out to them for around $900 a month, substantially less than the cost of a human operator. Naver, a South Korean internet giant, has a unit developing robot vehicles that can navigate busy environments with complicated layouts: an army of such bots already whizzes around delivering lunch boxes and parcels to its workers.

Office-process automation is also becoming more sophisticated. UiPath, a pioneer in automating mindless tasks such as copying and pasting information from one program to another, now offers other tools that extract data from paperwork using image-recognition algorithms or that map business processes by observing what workers do on their computers. Rob Enslin, UiPath's co-CEO, says the company already serves 10,000 clients. Power Automate, a tool from Microsoft that allows regular desk jockeys with little programming experience to automate tasks, such as expense or travel approvals, now has 7m monthly active users, says Charles Lamanna, who is responsible for many of the software giant's automation products.

Some businesses are tentatively beginning to embrace generative AI, too. However, as with robots and process automation, bedding in the new technology will not happen overnight. Allen & Overy, a law firm that in February launched a virtual legal assistant with ChatGPT-like powers, requires its lawyers to cross-check everything the bot spits out. CNET, a tech-news site, starting in November quietly published 73 articles written by a bot, first to the consternation and then the delight of journalists, after the articles were found to be riddled with errors.

The AI technology that underpins chatbots could one day be a boon for automation, reckons Mr Lamanna. But getting from science fiction to science fact is one thing. Getting from there to economic fact is quite another. ■

Bartleby Silver linings

The small consolations of office irritations

Even people who love their jobs have a few gripes. Even people who excel at their work have their share of worries. The office environment makes it hard to concentrate; their colleagues are annoying beyond belief; their career path within the organisation is not obvious. There are aspects of the workplace, like "reply all" email threads and any kind of role-playing, which are completely beyond redemption. This column is here to administer the balm of consolation for some of work's recurring irritations.

Start with a pervasive problem: being interrupted. You have muted notifications on Slack and cleared your calendar; the Prelude from Bach's Cello Suite No 1 is playing; your fingers are poised above the keyboard and a thought of world-altering profundity is gradually taking shape in your mind. Then there is a knock at the door, and a colleague asks if you have a minute to discuss the air-conditioning. By the time they have gone, so has that momentous thought and any sense of well-being.

Context-switching of this sort is more than simply annoying. A survey conducted in 2021 found that it takes people nine and a half minutes to resume a focused state of mind after switching between apps. But there is a bright side to being interrupted. A paper by Harshad Puranik of the University of Illinois Chicago and his co-authors asked a sample of employees in America to record how often they were distracted by colleagues and to report their sense of belonging to their organisations. They found that being interrupted involves a social interaction with colleagues that can strengthen a worker's feelings of connection. The next time a knock comes, remind yourself that at least you are not lonely.

What about some of the characters who make office life so teeth-grinding? Every company has its share of toadies who specialise in managing up: flattering the bosses and claiming more credit than is their due. Unctuousness is undoubtedly irritating. But it, too, can sometimes have wider benefits.

Recent research by Wei Cai of Columbia Business School and her co-authors found that teams performed better when they had some crawlers among them. People who got better assessments from their superiors than from their peers in performance-review processes were designated as "upward influencers" in the study. Too many characters of this sort is bad: at some point, team members will expend more effort competing for recognition than getting actual work done. But because these personality types are prepared to invest more time communicating with their managers, the presence of a handful of them ensures that a team does not become invisible to the bosses. A few suck-ups can be good for everyone.

What of traits that workers find most irritating about themselves, the things that may be holding them back? Impostor syndrome, the belief some people have that they do not deserve to be in positions of influence, is usually thought of as being bad for individuals and organisations alike. But it can have an upside.

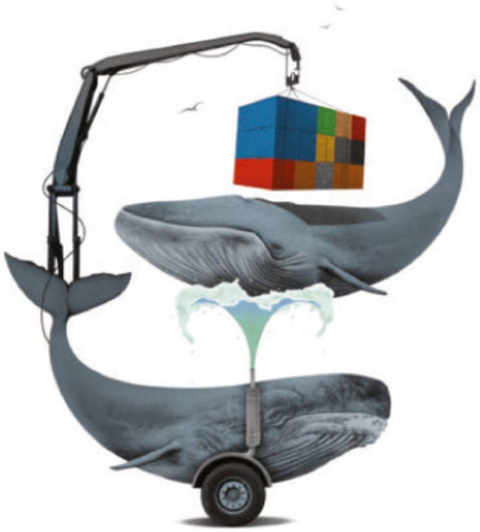
Research by Basima Tewfik of the MIT Sloan School of Management found that people who worry about being an impostor are regarded by others as having better interpersonal skills than those who are untroubled by self-doubt. It may be that a concern about lacking competence leads people to compensate by developing stronger relationships with others. In a world that increasingly prizes collaboration and soft skills, that is not to be sniffed at.

Weaknesses can turn into advantages in other ways, too. The idealised entrepreneur may drip with confidence and charisma, for example. But not everyone fits that mould. In a recent study, Lauren Howe and Jochen Menges of the University of Zurich asked participants in an investment game who had been asked about their own flaws to allocate funds to startups. They found that entrepreneurs who reveal a personal shortcoming, such as indecisiveness or insecurity, are more likely to attract funding from investors who share these same characteristics. Some weaknesses are not to be admitted: stupidity, say, or narcolepsy. But flaws can sometimes help people get ahead, not hinder them.

The problem with silver linings is that they are attached to clouds. You are still being interrupted all the time. You are still surrounded by annoying colleagues. Impostor syndrome still causes you unnecessary anxiety. Your weaknesses are still weaknesses. But there are bright sides to most things in office life, and they go beyond the payslip.

Schumpeter | High risk on the high seas

The world's two biggest shipping companies boldly set sail in opposite directions



Don't feel bad if MSC, the Mediterranean Shipping Company, is the biggest ocean-going carrier you have never heard of. It is meant to be that way. Its founder, Gianluigi Aponte, is a publicity-shy Italian billionaire, based in Switzerland, a country with no maritime borders and a culture of secrecy as deep as the ocean. His firm has taken the seafaring world by stealth. Born in 1970 with a single vessel trading between Somalia and southern Italy, MSC last year overtook A.P. Moller-Maersk to become the world's biggest container-shipping company. Yet its culture of silence remains. When its CEO, Soren Toft, spoke at a shipping jamboree in Long Beach this month, he revealed next to nothing. "We're not going to make [talking in public] a habit," he said gruffly.

Do not be put off. Actions speak louder than words. MSC hasn't simply edged past Maersk. It has left it in its wake. When it takes delivery of the ships it has on order, its total tonnage could be a whopping 40% greater than its Danish rival's, according to Alexia Dogani of Barclays, a bank. Meanwhile Maersk, the industry blueblood with a pedigree dating back to 1904, is abandoning the quest for dominance on the high seas. Instead of a big order book, it hopes to focus investment on higher-return services along the supply chain, from ports to rail, road and air networks, becoming, in the jargon, an integrator rather than a mere box-carrier.

In effect, then, the number one and number two companies in an industry at the centre of world trade are placing radically different bets on the future. They are doing this against the backdrop of a post-pandemic slowdown in container shipping, as well as longer-term questions about the future of globalisation. Whether either succeeds or not, they provide an intriguing natural experiment on different approaches to industrial commoditisation.

It is an extraordinary parting of the ways. For eight years the two companies have been in an alliance, called 2M, in which, like airlines swapping passengers in code-sharing agreements, they provide container space on each other's vessels. They have always made an odd couple. Imagine a budget airline like Ryanair teaming up with a plush carrier like Singapore Airlines and you get the picture. MSC was infamously unreliable (its initials, an old joke went, stood for "maybe ship comes"). Its staffing levels, as one ex-Maersk employee puts it, were "lean to the point of starvation". Maersk was the opposite. It was the industry's most punctual, best-staffed and most service-oriented carrier. But in the mid-2010s it had over-ordered mega-sized vessels, and needed help filling them. MSC, whose main selling point is cost, was delighted to oblige, partly to emulate Maersk's standards of service. It worked so well that alliances began to be considered the cornerstone of improved financial discipline in the industry. In a sign of MSC's "Maerskisation", in 2020 Mr Toft jumped ship from the Danish firm, where he had been chief operating officer.

There were drawbacks, though. As Alan Murphy of Sea Intelligence, a research firm, notes, alliances are a "fast track to commoditisation". Once you entrust your cargo to someone else's ships, it is hard to differentiate yourself. Moreover, as the strategies of both companies diverged, the alliance made less sense. MSC used boom times during the covid-19 pandemic to order enough ships to go it alone. As Maersk focused on logistics, it needed complete control of its cargoes, which was easier if they were on its own ships. In late January the two firms said that they would end the alliance in 2025 and sail their separate ways.

Their divergent strategies are bold—almost to the point of recklessness. MSC's buying spree will contribute to serious overcapacity in the market this year, driving down shipping rates. The assumption is that it hopes that its overwhelming size will enable it to achieve economies of scale, reduce unit costs and further expand market share, which is about 17% by volume. This is the classic approach of the market leader in a cyclical, investment-heavy industry, which feels it can outgun its competitors. The trouble is that smaller shipping lines are also spending their pandemic windfall on new ships. Size may also mean that MSC's standards slip, says Simon Heaney of Drewry, a shipping consultancy. He notes that last month the Australian Maritime Safety Authority, a regulator, said it had detained five MSC ships already this year, many because of substandard maintenance practices.

Maersk has a different problem. However sensible it is to maintain a disciplined order book, the risk is that its smaller fleet relative to MSC's puts off customers who want a greater choice of sailings and destinations. Maersk argues that many of its customers will benefit more from reliability, data-driven insights and the flexibility to divert cargoes at short notice than they will from size. Sceptics wonder whether customers will cough up more for integrated services, especially in a lacklustre economy. Moreover, Maersk's logistics business will compete with freight-forwarders, such as DHL and Kuehne+Nagel, which perform similar functions using a variety of carriers. If Maersk's strategy puts their noses out of joint, they may stop directing cargoes to its ships.

Long slogistics

Maersk has tried and failed to pivot in this way in the past. But this is a new era. It has more data than ever to work with. Companies wondering whether to reduce their exposure to China, to create additional capacity in Asia, or to "nearshore" production to North America may welcome new supply-chain options. And Maersk may be able to make a virtue of offering climate-friendlier freight routes for customers willing to pay for greenery.

From an economic point of view, the success of both long-term strategies would be a good thing. If MSC drives down shipping costs, this would help reduce goods prices. If Maersk becomes a smooth integrator, supply chains could go back to being as boringly reliable—and unnewsworthy—as they once were. Even MSC would welcome that. ■

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The new economics of work

Jobs for all

SAN FRANCISCO AND TOKYO

Why the West's employment miracle looks likely to continue

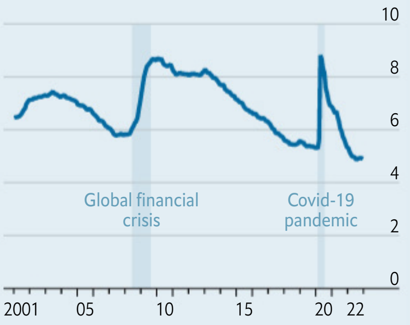
To see what a world swimming in jobs looks like, visit Japan. At airports staff straighten suitcases after they tumble onto the carousel. Men with fluorescent batons stand near construction sites, reminding you not to walk onto the site. In department stores smartly dressed women help you use the lifts. And in one of Tokyo's best bars, a team of four prepared your correspondent's gin martini (from the freezer, of course, free-poured, and very dry).

Now the rest of the rich world is starting to look more Japanese. Since the heady post-lockdown days of 2021 GDP growth across the 38 countries of the OECD has slowed almost to a standstill, and in some countries is negative. Business confidence is below its long-run average. Yet there is not much sign of weakness in the labour market. On March 7th Jerome Powell, chairman of the Federal Reserve, observed that in America, "despite the slowdown in growth, the labour market remains extremely tight." Across the OECD as a whole the unemployment rate was 4.9% in December—the lowest in many decades. From the third to the fourth quarter of the year, the rich world added about 1m jobs, in line with the long-run average. In half of OECD countries, including Canada, France and Germany, there has never been a higher share of working-age folk in a job.

Joblessness is rising in a few countries, including Austria and Israel. One of the worst performers is Finland, where the unemployment rate has risen by a percentage point from its post-lockdown low. In the face of soaring energy prices and reduced trade with Russia, the country's GDP fell by 0.6% in the fourth quarter of 2022. But "worst" is relative. At 7.1% in January, Finland's jobless rate is still well below its long-run average. Meanwhile, most of the places synonymous with the sky-high joblessness of the early 2010s—Greece, Italy, Spain—are doing much better now.

Missing: robots

OECD countries, unemployment rate, %



Source: OECD

This employment miracle hints at a change in Western economies. To understand why, return to Japan. Local employers dislike firing workers, even if they have little for them to do. In part because more and more people are retiring, firms struggle for new staff and are reluctant to let people go unless they have no choice. The result is an unemployment rate which barely rises, even in recessions. In the past 30 years Japan's jobless rate has varied by just 3.5 percentage points, compared with 9.5 points in the average rich country.

A more Japanese labour market would have disadvantages. If workers do not leave poorly performing firms, they cannot join innovative ones which drive growth. Indeed, the data suggest that rich-world productivity growth is exceptionally weak at present. However, spells of unemployment can exert a terrible human toll. Countries where unemployment is less volatile also tend to have milder recessions, points out Dario Perkins of TS Lombard, a financial-services firm. When the labour market does not crack, people can keep spending even as growth slows.

What explains employers' Japanese turn? Perhaps, after the pandemic, bosses are kinder to workers. Another, more real- ►►

istic, possibility is that firms are in a strong financial position. This may allow them to withstand lower revenues today without needing to slash costs. Many received help from governments during the covid era. And in recent years corporate profits have been hefty. Businesses across the rich world are still sitting on cash piles about a third higher than before the pandemic.

A more intriguing possibility concerns the workforce. According to our estimates, the rich world is “missing” 10m workers, or roughly 1.5% of the labour force, relative to pre-pandemic trends. In Britain and Italy the workforce has actually shrunk. Early retirements and an ageing population explain part of the deficit. Covid may have pushed people to reassess their priorities, prompting them to drop out. Some even think long covid is forcing people to stay on the sidelines. Whatever the explanation, falling participation has wreaked havoc with plans. Many firms fired staff when the pandemic hit, only to struggle to rehire them in 2021. That year vacancies in the OECD hit an all-time high of 30m.

Employers may now want to avoid making the same mistake. A recent report by S&P Global Market Intelligence, a consultancy, identifies “a reluctance among companies to sanction job cuts due to the immense challenges they faced in rehiring post-pandemic”. In America gross job losses have so far been smaller than is normal at the start of the year. Daniel Silver of JPMorgan Chase, a bank, speculates that this is because “firms are reluctant to let go of workers given perceived difficulties in eventual rehiring.”

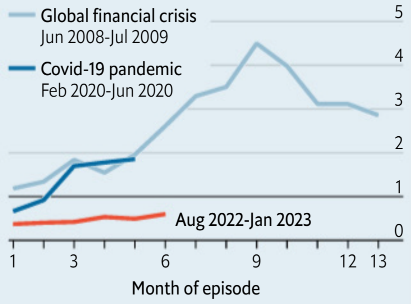
Labour-market pain may end up being merely delayed. In some past recessions unemployment only started to rise decisively some time after GDP started to fall. But “real-time” data show little sign that joblessness is about to surge. A recent survey by ManpowerGroup, a staffing firm, suggests employers in most countries still have ambitious hiring plans. In America the National Federation of Independent Business, a lobby group, finds an unusually large share of small firms plan to create new jobs in the next three months.

Confronted with labour-market resilience even in the face of rising interest rates, central banks may be tempted to tighten monetary policy faster still. Further increases in rates, or another energy shock, may push employers over the edge, forcing them to cut staff. The pressure to retain staff could, however, become a structural issue. Over the next decade rich-world populations will age rapidly, dragging further on labour supply. Good workers are likely to become harder to find. Next time there may only be three people making your correspondent’s martini. ■

Hire, don’t fire

World, companies reporting a decline in employment due to cost-cutting*

Long-term average=1



Source: S&P Global PMI

*Based on a survey of purchasing managers

China’s economic growth

Qiang Ker-ching

HONG KONG

What comes after the Li Keqiang index?

When Li Keqiang, China’s prime minister, gave his final speech at the National People’s Congress on March 5th, it was already clear who would succeed him. But a successor has yet to be found for the “Li Keqiang index”. This unofficial proxy for China’s economic growth was inspired by a leaked conversation between Mr Li, when he was party secretary for the province of Liaoning, and an American diplomat. Mr Li confessed that the province’s GDP figures were “unreliable”. Instead, he focused on electricity consumption, rail cargo and bank lending. Taking our cue from Mr Li, this newspaper thought it would be fun to see what the three indicators, bundled into a single index, revealed about China’s economy at a national level.

The index has had a good run since its introduction in 2010. A version has its own “ticker” on Bloomberg. It inspired a similar index for India. Teams of researchers at the Federal Reserve Bank of San Francisco and separately at the New York Fed have tested the usefulness of Mr Li’s preferred indicators. A paper published in 2017 by Hunter Clark and Maxim Pinkovskiy of the New York Fed, together with Xavier Sala-i-Martin of Columbia University, calculated that the best combination of the three indicators gave roughly 60% weight to loans, 30% to electricity and 10% to rail cargo. In a subsequent paper, Mr Clark, Mr Pinkovskiy and Jeff Dawson of the New York Fed suggested replacing lending with M2, a measure of the money supply, because bank-credit figures failed to capture a government crackdown on shadow lending.

Critics argue that the declining energy intensity of China’s economy undermines the index. But that is not quite true. As long as electricity follows an identifiable trend, deviations from the trend are revealing about economic upturns and downturns. What really broke the Li Keqiang index was the covid-19 pandemic. The decline in retail sales, air travel and the property market was far more dramatic than the slowdown in industry, electricity use or rail freight. Meanwhile, M2 grew quickly at the end of last year as people hoarded cash.

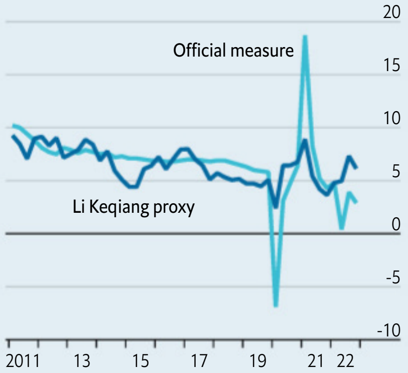
What are the alternatives? Those sceptical of China’s data yearn to escape its statistical system altogether. Perhaps the brightness of lights at night, recorded by satellites, could offer a truly independent guide to growth? But this measure has its own problems. The newer satellites do not have a long track record and the older ones struggled to distinguish between the bright and very bright lights of cities. Coverage is also patchy from month to month.

Mr Pinkovskiy and his co-authors have instead used night-time lights not as a direct measure of growth, but as a way to adjudicate between other potential proxies. If the contenders are good at tracking night-time lights, they should be good at tracking growth, too. The authors’ investigations suggest that in addition to lending (or M2), electricity and (to a lesser degree) rail freight, retail sales are a useful indicator. Adding them would certainly have made a difference during the pandemic.

No diplomatic cable has yet come to light revealing the indicators favoured by China’s probable new prime minister, Li Qiang. He was previously party chief of Shanghai, where services account for about three-quarters of GDP. The equivalent figure in rust-belt Liaoning was only 40% when Li Keqiang first revealed the ingredients of the index named after him. Safe to say, then, any “Li Qiang index” will not neglect the services sector of China’s vastly altered economy. ■

Li’s legacy

China, GDP, % change on a year earlier



Sources: Haver Analytics; *The Economist*

Finance and fun

An anti-party party

SHANGHAI

The Chinese Communist Party takes aim at hedonistic investment bankers

SENIOR STAFF at China's largest investment banks have been flying economy, not first class, in recent months. They are cutting back on entertaining clients and drinking less, if at all, at banquets. A banker says he has been warning junior colleagues to avoid ostentatious displays of wealth. It is, he reports, for their own good.

"Common prosperity", a campaign for a more equal China, which was launched in 2021 by Xi Jinping, is coming to investment banking. A recent commentary by the official corruption watchdog, published on February 23rd, orders financiers to smash "financial elitism, worship of wealth and reverence for the West". Meanwhile, the disappearance of Bao Fan, a high-profile banker, reportedly to take part in an investigation, has put the industry on edge.

Just a few years ago a steady stream of Chinese-born, Wall Street-trained bankers was flowing from London and New York to Beijing, Hong Kong and Shanghai. The growing cohort was swapping mostly mid-level (but sometimes senior) jobs at elite Western financial firms for better-paid positions at Chinese investment banks.

The trend was about more than just pay, however. Many bankers wanted to return to a richer, more vibrant homeland after years spent overseas. Foreign financial firms were, and still are, expanding their local offices. Nightlife, restaurants and luxury-car dealerships exerted a pull all of their own. In short, Chinese cities were ready to cater to a class of young bankers with cash to burn.

Now the party is winding down. Even before the focus on Chinese finance's culture, the industry had been subject to a years-long corruption crackdown targeting bosses. The country's zero-covid policy stopped high-flying bankers travelling abroad for several years—forcing those who had recently returned to consider whether their future really did lie in China.

And it is has become clear that the Communist Party has taken an extremely grim view of finance. The watchdog's critical commentary instructs bankers to cast out any notions they may have of "exceptionalism, distinctiveness and superiority". At times the document talks about finance as if it were a virus with "hidden variants" that must be battled in an effort which "one cannot grow too tired to fight".

The detention of Mr Bao, founder of China Renaissance, a boutique investment bank focused on technology, has also shocked local executives. His company has been unable to reach him since he disappeared in mid-February, but has said it has been informed he is co-operating with an investigation. According to the *Wall Street Journal*, Mr Bao has been detained by the same corruption watchdog that published the recent attack on the financial industry.

The Communist Party has already claimed success in avoiding the rise of a "crypto-bro" culture, which it did by banning cryptocurrency trading. Some of the talent that would otherwise have gone into developing related products has been channelled elsewhere. Perhaps Mr Xi thinks he can do the same to a generation of West-loving, hedonistic bankers. ■

Overseas listings

The bigger apple

New York is hoovering up business from Hong Kong and London

IN 2006 CHARLES SCHUMER and Michael Bloomberg took to the pages of the *Wall Street Journal* to express their concerns about New York. The senator and mayor both feared that the Big Apple was losing its financial edge. The city had, after all, captured only one of the previous year's 24 largest initial public offerings (IPOs).

New York's bigwigs have little to worry about these days. In the battle between global financial centres, the city is increasingly a power with no equal. That is especially true when it comes to stockmarkets, where America's financial hub is extending its already comfortable lead.

On March 3rd Arm, a British semiconductor firm owned by SoftBank, a Japanese investment outfit, announced that it would list only in New York, rebuffing a campaign by British ministers to encourage a London listing. A day earlier, CRH, a London-listed building-materials firm, said it would move its main listing to New York. Other European countries have also lost out. The same week Linde, a chemical firm that was until recently the largest constituent of Germany's DAX index, quit Frankfurt, keeping its American listing.

After a pause of almost two years, Chinese firms are also looking westward. New rules published last month by the country's securities regulator mean that overseas listings will be vetted more closely, but they also offer an avenue for more firms to list abroad. Last month Hesai Group, a Chinese electronics company, raised $190m on the Nasdaq, the largest Chinese listing in America since 2021. Shein, a fashion firm, is also said to be looking to float its shares in New York. American regulators may be toughening up on some Chinese firms, by employing sanctions and export controls, but the Big Apple seems to have retained its allure.

The trend reflects the failures of Hong Kong and London, the only stockmarkets that can really compete with New York. In the past four quarters, during which business was slow, American exchanges won $24bn in overseas IPOs, eight times as much as managed together by London and Hong Kong (excluding Chinese stocks), according to Dealogic, a data provider. In 2019, by contrast, New York only took in three times as much business.

Hong Kong's stockmarket once held some attraction for foreign companies, including Rusal, a Russian aluminium firm, Prada, an Italian fashion house, and Samsonite, an American luggage company. But ▸▸

You wouldn't want to be anywhere else

the city's current listings pipeline contains few firms from beyond China. Meanwhile, London has its own drawbacks. One common gripe is the lack of a natural base of investors. Britain's pension funds and insurers invest a notably small proportion of their assets in domestic stocks.

Stock exchanges in Shanghai and Shenzhen are enormous, boasting combined total market capitalisations of more than $12trn. But the Chinese Communist Party is an ever-present threat, and Chinese stockmarkets still behave somewhat irrationally. Indeed, shares in firms listed on mainland and Hong Kong bourses are almost 40% more expensive on the mainland. Tokyo's stockmarket is also big, with a total market capitalisation of nearly $5.4trn, but these days manages to attract little international business.

Other places simply cannot match the big three's heft. Amsterdam and Dubai have grown, but remain regional, murky or both. Singapore, which passed Hong Kong in last year's Global Financial Centres Index, compiled by Z/Yen, a consultancy, is a growing wealth-management hub, but remains a minnow when it comes to stocks.

As Messrs Schumer and Bloomberg can attest, financial competition sometimes changes in unpredictable ways. Right now, though, New York appears to be the listing venue of choice for companies in America, Europe, and—when officials on both sides allow—China, too. The city is fast pulling away from the rest of the field. ■

Quantitative investing

Hedge-fund lessons

GREENWICH, CONNECTICUT

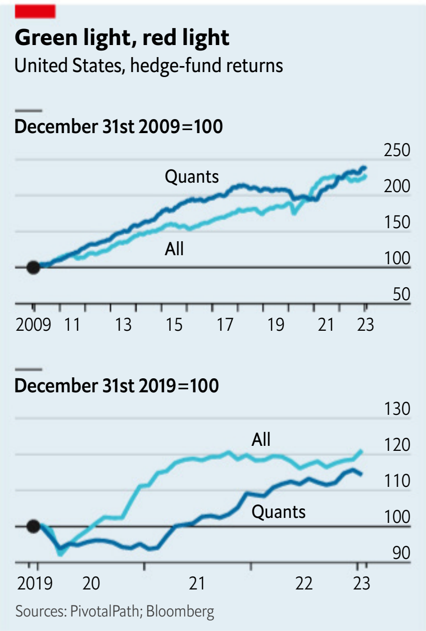
The experience of finance suggests AI will take time to infiltrate other businesses

WHO ARE the earliest adopters of new technologies? Cutting-edge stuff tends to be expensive, meaning the answer is often the extremely rich. Early adopters also tend to be incentivised by cut-throat competition to look beyond the status quo. As such, there may be no group more likely to pick up new tools than the uber-rich and hyper-competitive hedge-fund industry.

This rule appears to hold for artificial intelligence (AI) and machine learning, which were first employed by hedge funds decades ago, well before the recent hype. First came the "quants", or quantitative investors, who use data and algorithms to pick stocks and place short-term bets on which assets will rise and fall. Two Sigma, a quant fund in New York, has been experimenting with these techniques since its founding in 2001. Man Group, a British outfit with a big quant arm, launched its first machine-learning fund in 2014. AQR Capital Management, from Greenwich, Connecticut, began using AI at around the same time. Then came the rest of the industry. The hedge funds' experience demonstrates AI's ability to revolutionise business—but also shows that it takes time to do so, and that progress can be interrupted.

AI and machine-learning funds seemed like the final step in the march of the robots. Cheap index funds, with stocks picked by algorithms, had already swelled in size, with assets under management eclipsing those of traditional active funds in 2019. Exchange-traded funds offered cheap exposure to basic strategies, such as picking growth stocks, with little need for human involvement. The flagship fund of Renaissance Technologies, the first ever quant outfit, established in 1982, earned average annual returns of 66% for decades. In the 2000s fast cables gave rise to high-frequency marketmakers, including Citadel Securities and Virtu, which were able to trade shares by the nanosecond. Newer quant outfits, like AQR and Two Sigma, beat humans' returns and gobbled up assets.

By the end of 2019, automated algorithms took both sides of trades; more often than not high-frequency traders faced off against quant investors, who had automated their investment processes; algorithms managed a majority of investors' assets in passive index funds; and all of the biggest, most successful hedge funds used quantitative methods, at least to some degree. The traditional types were throwing in the towel. Philippe Jabre, a star investor, blamed computerised models that had "imperceptibly replaced" traditional actors when he closed his fund in 2018. As a result of all this automation, the stockmarket was more efficient than ever before. Execution was lightning fast and cost next to nothing. Individuals could invest savings for a fraction of a penny on the dollar.



Sources: PivotalPath; Bloomberg

Machine learning held the promise of still greater fruits. The way one investor described it was that quantitative investing started with a hypothesis: that of momentum, or the idea that stocks which have risen faster than the rest of the index would continue to do so. This hypothesis allows individual stocks to be tested against historical data to assess if their value will continue to rise. By contrast, with machine learning, investors could "start with the data and look for a hypothesis". In other words, the algorithms could decide both what to pick and why to pick it.

Yet automation's great march forward has not continued unabated—humans have fought back. Towards the end of 2019 all the major retail brokers, including Charles Schwab, E*TRADE and TD Ameritrade, slashed commissions to zero in the face of competition from a new entrant, Robinhood. A few months later, spurred by pandemic boredom and stimulus cheques, retail trading began to spike. It reached a peak in the frenzied early months of 2021 when day traders, co-ordinating on social media, piled into unloved stocks, causing their prices to spiral higher. At the same time, many quantitative strategies seemed to stall. Most quants underperformed the markets, as well as human hedge funds, in 2020 and early 2021. AQR closed a handful of funds after persistent outflows.

When markets reversed in 2022, many of these trends flipped. Retail's share of trading fell back as losses piled up. The quants came back with a vengeance. AQR's longest-running fund returned a whopping 44%, even as markets shed 20%.

This zigzag, and robots' growing role, holds lessons for other industries. The first is that humans can react in unexpected ways to new technology. The falling cost of trade execution seemed to empower investing machines—until costs went to zero, at which point it fuelled a retail renaissance. Even if retail's share of trading is not at its peak, it remains elevated compared with before 2019. Retail trades now make up a third of trading volumes in stocks (excluding marketmakers). Their dominance of stock options, a type of derivative bet on

Buttonwood A ripe harvest

Why commodities shine in a time of stagflation

WATCHING JEROME POWELL testify before Congress on March 7th brought on an irrepressible sense of déjà vu. “The process of getting inflation back down to 2% has a long way to go and is likely to be bumpy,” warned the Federal Reserve’s chairman. Recent economic data suggest that “the ultimate level of interest rates is likely to be higher than previously anticipated.” It is a message that Mr Powell and his colleagues have been repeating, in various forms, since the Fed started raising rates a year ago. As so many times before, markets that had lulled themselves into a sense of complacency took fright and sold off.

Investors are serially reluctant to take Mr Powell at his word because its implications are unpleasant for them. An ideal portfolio would contain a mix of asset classes that each prospers in different economic scenarios. But all the traditional classes—cash, bonds and stocks—do badly when inflation is high and rates are rising. Inflation erodes the value of both cash and the coupons paid by fixed-rate bonds. Rising rates push bond prices down to align their yields with those prevailing in the market, and knock share prices by making future earnings less valuable today.

Elroy Dimson, Paul Marsh and Mike Staunton, three academics, demonstrate this in Credit Suisse’s *Global Investment Returns Yearbook*. They show that globally, between 1900 and 2022, both stocks and bonds beat inflation handily, posting annualised real returns of 5% and 1.7% respectively. But during years of high inflation, both performed poorly. On average, real bond returns flipped from positive to negative when inflation rose much above 4%. Stocks did the same at around 7.5%. In “stagflation” years, when high inflation coincided with low growth, things got much worse. Shares lost 4.7%, and bonds 9%.

In other words, neither bonds nor stocks are short-term hedges against inflation, even if both outrun it in the long term. But this dismal conclusion is paired with a brighter one. Commodities, as a frequent source of inflation, offer an effective hedge. What is more, commodity futures—contracts offering exposure without requiring the purchase of actual barrels of oil or bushels of wheat—look like a diversified investor’s dream asset.

To see why, start with their excess return over cash-like Treasury bills. In the long run, the *Yearbook*’s authors put this at an annualised 6.5% for dollar investors, beating even American stocks’ 5.9%. Better still, this return is achieved while being little correlated with shares, and moving inversely with bonds.

Commodity futures can be mixed with other assets for a portfolio with a much better trade-off between risk and return. At historical rates, a portfolio that is evenly split between stocks and commodity futures would have a better return than a stock-only portfolio, and three-quarters of the volatility. Best of all for an investor fearing high inflation and low growth, commodity futures had an average excess return of 10% in stagflationary years.

All this is appealing to the high-octane end of finance. AQR Capital Management, a hedge fund known for its mathematical sophistication, published a paper last April entitled: “Building a better commodities portfolio”. Citadel, an investment firm that last year broke the record for the largest annual gain in dollar terms, has been building up its commodities arm for years. This part of the business is reported to have made a hefty chunk of the $16bn in net profits Citadel made for clients.

Yet commodity futures remain an esoteric asset class rather than a portfolio staple. Like any investment, they do not offer guaranteed returns, as history demonstrates. Gary Gorton and Geert Rouwenhorst, two academics, brought commodities’ merits to widespread attention with a paper published in 2006. That was just in time for a deep, lengthy crash, beginning in February 2008. From this point, a broad index of commodity prices lost 42% in real terms and did not regain its peak until September 2021. Investors were scared off.

Another reason is that the market is tiny. Out of total global investible assets worth $230trn, commodity futures make up less than $500bn, or 0.2%. Physical supply, meanwhile, is constrained. Were the world’s biggest investors to plough capital into the futures market, they would be liable to distort prices enough to render the exercise futile. But for smaller outfits—and fast-money ones like Citadel—commodity futures offer a lot of advantages. That is true even if Mr Powell keeps up the bad news.

▸ shares, is even greater (see Graphic detail).

The second is that not all technologies make markets more efficient. One of the explanations for AQR’s period of underperformance, argues Cliff Asness, the firm’s co-founder, is how extreme valuations became and how long a “bubble in everything” persisted. In part this might be the result of overexuberance among retail investors. “Getting information and getting it quickly does not mean processing it well,” reckons Mr Asness. “I tend to think things like social media make the market less, not more, efficient...People don’t hear counter-opinions, they hear their own, and in politics that can lead to some dangerous craziness and in markets that can lead to some really weird price action.”

The third is that robots take time to find their place. Machine-learning funds have been around for a while and appear to outperform human competitors, at least a little. But they have not amassed vast assets, in part because they are a hard sell. After all, few people understand the risks involved. Those who have devoted their careers to machine learning are acutely aware of this. In order to build confidence, “we have invested a lot more in explaining to clients why we think the machine-learning strategies are doing what they are doing,” reports Greg Bond of Man Numeric, Man Group’s quantitative arm.

There was a time when everyone thought the quants had figured it out. That is not the perception today. When it comes to the stockmarket, at least, automation has not been the winner-takes-all event that many fear elsewhere. It is more like a tug-of-war between humans and machines. And though the machines are winning, humans have not let go just yet. ■

Free exchange | Laboratory accidents

Emerging-market central-bank experiments risk reigniting inflation

When prices began to rise unusually quickly two years ago, one group was fastest to react: emerging-market central bankers. They realised inflation had arrived for the long haul well before their peers in rich countries, and kept raising interest rates as prices soared. In policymaking environments as difficult as Brazil and Russia officials have resisted pressure from politicians to cut rates. This follows two decades in which emerging-market central bankers pulled off the impressive feat of bringing down inflation in places where it had seemed intractable. The whole period has been a triumph not just for the officials involved, but for the economists who insisted on the need for independent central banks in emerging economies—and for them to focus on keeping prices stable, just like policymakers in rich countries.

Yet even as the inflation monster remains untamed, emerging-market central banks are engaging in experiments that put this progress at risk. Some of the new measures are in response to changes beyond their control, such as Vladimir Putin's invasion of Ukraine. Others are attempts to overcome painfully familiar problems, like currency depreciation. All threaten to undermine recent advances, which are ultimately based on central-bank credibility. Over the past few decades, the better policymakers managed to anchor inflation, the more their targets were believed and the more prices were constrained. In 1995 median inflation in emerging economies was 10%; by 2017 it had fallen to 3%. This was the pinnacle of a slow, miraculous transformation.

The most expensive recent experiments are those which seek to prevent currencies falling in value. Central bankers once used to make their currencies more attractive by ratcheting up interest rates and selling off foreign-exchange reserves. They are now less keen on raising rates to protect exchange rates, preferring to do so only to tackle inflation, and some lack reserves after sales at the start of the covid-19 pandemic. Thus officials are trying new ways to seduce depositors into keeping funds in local currencies, rather than dollars. At the end of 2021, during a months-long collapse in the lira, Turkey's central bank offered to compensate anyone still willing to deposit the currency for however much they ended up losing against the dollar. Shortly before Sri Lanka's government defaulted in April, it offered a similar guarantee to citizens overseas. In October Hungary's central bank opened one-day windows in which depositors could earn bumper interest rates. The problem is not that these measures are ineffective. By mid-2022 the lira had stabilised even though Turkish interest rates stayed ultra-low. But by the end of the year, the Turkish government, which covers the central bank's expenses, had to find an extra 92bn lira ($5bn, or 0.5% of GDP) to cover the cost of the deposit scheme.

Russia's central bank is another enthusiastic experimenter. It had stocked up on gold and currencies from China and other friendly countries, which helped when sanctions cut off $300bn in reserves held by banks in America and Europe. Early in the war, officials also steadied the ship by doubling interest rates, helping to calm the rouble. Since then, however, things have got harder. As the country has run bigger than expected fiscal deficits, an obscure budget rule has forced the central bank to buy back lost reserves with roubles. This has pushed policymakers to experiment with measures that make Russia uncomfortably reliant on China. When officials replenish reserves, they will do so by buying a lot more yuan, with plans for 60% of the country's total cushion to be issued by Beijing, up from less than 20% before the war. Work on a digital currency has been accelerated; a pilot is scheduled for April. It will be carried out with Chinese banks.

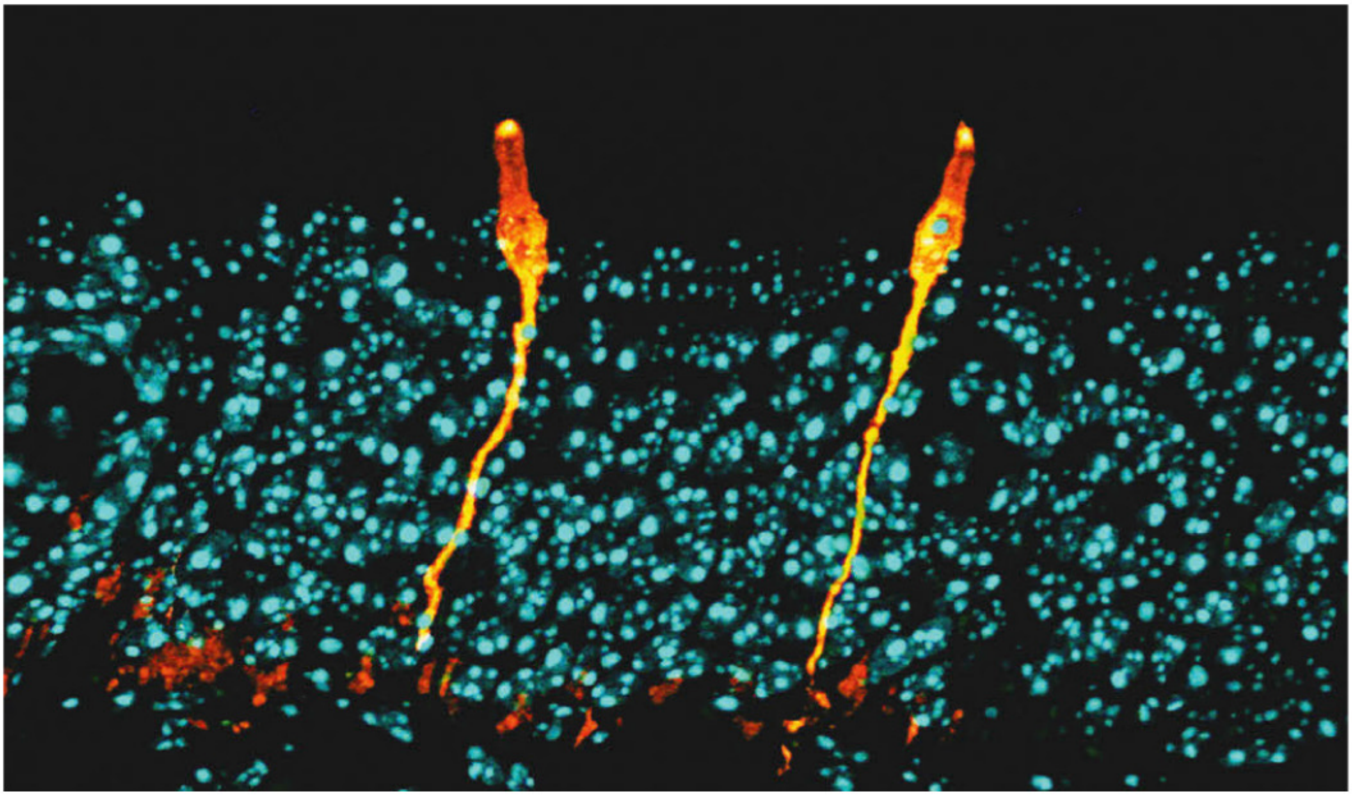
Other experiments involve playing around with central banks' balance-sheets. The treasuries of advanced economies rarely run budgets on a hand-to-mouth basis, since they are equipped with plenty of capital and have the option of issuing more debt. By contrast, emerging-market governments, such as those in India and the United Arab Emirates, increasingly plug gaps by dipping into a "ways-and-means" account at the central bank. This is a risky move. If tax revenues do not come in above expectations, to even out the gap, the government ends up in an overdraft. As long as the overdraft is small, and interest rates high enough to encourage politicians to borrow elsewhere when possible, it is hard to go too wrong. But in recent years governments have used these accounts—which are counted as borrowing by the IMF and World Bank, though not by the countries involved—to get around debt limits set by domestic lawmakers. Nigeria's overdraft is now roughly equal to its entire stack of official domestic debt.

Boom!

Central bankers in countries including Ghana and Nigeria have come up with what at first glance appears a clever fix: converting the overdrafts into bonds, which have lower interest rates and are easier to restructure. There is, however, a catch. Emptying the accounts by issuing bonds allows governments to build up their overdrafts once again, in the process relying on central banks for yet another lifeline. Ultimately, this is tantamount to financing government borrowing through the back-door—something that tends to end up with markets pricing in runaway inflation.

There are already plenty of threats to emerging-market central banks. Chief among them is the fact it will be harder to get policy right as inflation falls than it was while it rose. As emerging-market central bankers quickly spotted, global shocks sent prices soaring everywhere. But economies cool in very different ways, based on the reactions of consumers, industries and politicians. Central bankers in emerging economies lack the granular data at the disposal of those in advanced economies to track these changes. They would be well-advised to spend their time scrutinising the limited information available to them rather than dreaming up innovations that may undermine hard-won credibility. ■

Science & technology



The American Association for the Advancement of Science

Worlds within, worlds without

WASHINGTON, DC

This year's meeting of the AAAS looked at coinage and democracy, brains and genes, and the ocean and the climate. But first, the Human Cell Atlas

WHAT GETS hyped, and what remains neglected, often depends on good storytelling. When the Human Genome Project began, in 1990, it had a simple story, well told. From a standing start, American taxpayers would pay for an exhaustive map of the DNA that makes up the 24 sorts of chromosomes found in the human genome (women have 23; men possess an extra tiddler that carries the genetic switch for maleness). Others were welcome to join in (and did; a third of the work was done in Britain, paid for by the Wellcome Trust), and there would be international co-ordination, to stop duplication of effort. But the moving spirit was the American government. And the budget was measured in billions.

It was a brilliant success, both scientifically and as a public-relations exercise for American science. By the time it was done, most people who would consider themselves well-informed had heard of it. Indeed, in a rare shift in public consciousness about scientific jargon, journalists no longer found themselves required by their editors to explain what DNA actually was every single time it was mentioned.

Who, however, has heard of the Human Cell Atlas? Precious few. Yet its goal resembles the genome project's. It is to do for histology what was done for genetics by making an exhaustive map of a set of components of the human body—in this case, its cells, rather than its DNA. That, as this year's meeting of the American Association for the Advancement of Science (AAAS), held in Washington, DC, heard, is a goal with as much medical importance as the genome project had. But the Human Cell Atlas's modest beginnings, decentralised organisation and unpushy leaders, mean it has remained almost invisible.

The genome project was led by men (and they were all men) of boundless ego and public presence. Contrariwise, the Cell Atlas project was founded and is run by a pair of quietly determined women: Sarah Teichmann and Aviv Regev. Their day jobs are, respectively, at the Wellcome Sanger Institute, near Cambridge, England, and Genentech, a biopharma firm near San Francisco. But they also manage to find time to run the steering committee which keeps the atlas show on the road. Together with Stephen Quake, organiser of a parallel and co-ordinated project called Tabula Sapiens, which was carried out at the Chan-Zuckerberg Biohub in California, they apprised those attending the meeting of the project's progress to date.

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64 Genes and brains
65 Silver and democracy

I contain multitudes

An average adult human body is composed of 37.2trn cells. Clearly, no currently imaginable technology is going to be able to locate them all individually. But, just as a real atlas does not show every building, a cell atlas need not show every cell. It should, however, identify and characterise every type of cell, and also where that cell type is found in the body—not only which organ, or even which tissue within an organ, but whereabouts within a tissue.

As of March 3rd, the date of the session addressed by Drs Regev, Teichmann and Quake, the Cell Atlas project, which began in October 2016, had signed up 2,704 researchers from 1,483 institutes in 86 countries. Together, those scientists had exam- ▸▸

ined 14,635 samples from 9,554 donors, and logged data from 120m cells—a number that is doubling every 180 days or so.

Importantly for the organisers' goals (and also in contradistinction to the genome project), institutes on every inhabited continent are helping to create the atlas. Since they draw their material from local samples, this means that from the start, even though the richer parts of the planet are inevitably over-represented, data from a wide variety of ethnic backgrounds have been included.

Unlike the genome project, which had a clear end point, known in advance (the number of genetic "letters" in the human genome could be calculated by measuring how much DNA it contained), the Cell Atlas project's goal is fuzzy. When it began, no one knew how many types of cell there were. The answer turns out to be, "a lot more than people once thought".

A textbook printed in 2016 would probably have given a figure of about 300, while acknowledging that was surely an underestimate. So far, researchers for the atlas have identified thousands—the precise number depending on how finicky you are about the amount of difference there needs to be between two cells for them to count as different types.

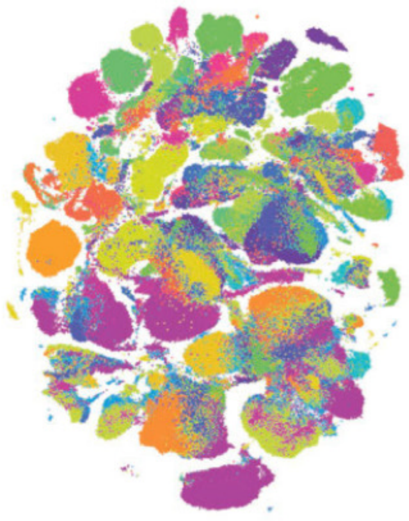
No tabula rasa

That difference is determined by which of the 20,000 protein-coding genes identified by the genome project are active within a cell—for this mix of proteins determines both a cell's structure and what it does. It is that variability of protein composition which permits the division of labour and specialisation of function that have allowed complex multicellular organisms such as human beings to evolve.

Rather than hunt proteins directly, the atlas's cartographers are hunting RNA. Proteins are made by translating edited transcripts of genes, known as messenger RNA (mRNA) molecules, into chains of amino acids. Such messengers can thus act as proxies for the proteins they encode. And techniques for counting and characterising RNA molecules are much better established than equivalents for proteins.

It is thus possible to take a single cell, extract its mRNA, and measure the amount, if any, of each such transcript. This, as Dr Regev explained to the meeting, means the cell thus analysed can be put at a location in a mathematical space that is described not by two axes, as on a standard graph, or even by three, as with a three-dimensional graph, but by 20,000 axes, one for each protein-coding gene.

Though human brains cannot begin to cope with the idea of a 20,000-dimensional graph, a computer can. It is able to cluster cells according to their positions in such a multidimensional space, and from the way they cluster, it can sort them into baskets corresponding to cell types.

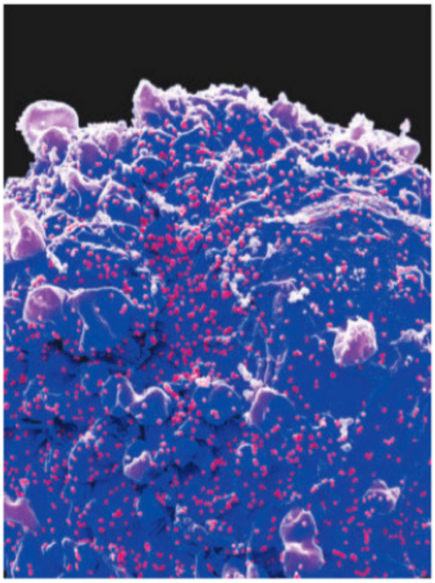


Human cell types in two dimensions

Then, for the benefit of benighted human brains, it can apply a mathematical technique which compresses the whole thing back to two dimensions, for ease of viewing. From this (see picture above) it is possible to see cell types emerge.

Different organs have different numbers of cell types. The one with the most (3,000 from an early draft, but undoubtedly more than that) is the brain. This is little surprise considering the complexity of the brain's job. But even the humble gut has at least 137.

Each organ, though, whether rich or poor in cell types, is the subject of its own sub-atlas in the project. And all data collected by participant organisations are made available to the world as soon as they have been collected and verified, so that other researchers may benefit from them.



Virus particles escaping from a kidney cell

After a year or so of preliminaries, the Cell Atlas project was launched at an event in London, organised by Dr Regev (then at the Broad Institute, in Cambridge, Massachusetts) and Dr Teichmann. This was attended by about 100 researchers. In 2017, the Chan-Zuckerberg Initiative came on board. So far, this charity has donated $254m towards the project, as well as sponsoring Tabula Sapiens. That enterprise collected its first samples in 2019, building on the back of an earlier project on mice. The idea is to produce a first draft of the full atlas in 2025.

Besides posting data immediately, each group involved puts out its own papers. The Tabula Sapiens team, for example, published a manuscript in 2022, describing what they had done. They had focused on obtaining samples of multiple different organs from the same individuals. To do so, they had harvested material from people who had volunteered as organ donors, and had then met an untimely end.

In collaboration with a local organ-donation charity, and having obtained family consent, the project's "crash team" removed from these donors tissues not required for transplant, and did so within an hour of the withdrawal of life support. Not all donors offered were deemed suitable. In particular, in order to draw the widest-ranging possible set of conclusions, the team needed a balance of both sexes and a range of ethnicities. In the end, they obtained multiple samples of 24 types of tissue and organ from 15 donors.

Most other research groups are not as focused as this. They will use material from biopsies collected for medical reasons, when such are available. But they often study post-mortem samples, which have frequently been frozen, and may thus have had their structure changed in subtle ways. Whatever a sample's source, however, it must then be processed.

The genome project relied on two main technologies. One was DNA sequencing, which provided the genetic letters, in order, of short bits of DNA chopped at random from a chromosome. The other was computers, which spotted overlaps between those sequences, and so patched the whole chromosome together. Cell atlases, however, require many approaches. Indeed, many times many of them.

Ways and means

A paper Dr Teichmann and Dr Regev published in December 2022 describes six classes of technological methods involved in the Cell Atlas project. They range from tissue imaging and histology via transcriptomics to "genome and epigenomics". These classes further subdivide into 100 categories, ranging from techniques like magnetic-resonance imaging which can be applied to entire bodies, to nucleosome occupancy and methylome sequencing, which concerns itself with individual nodes of DNA wrapped around protein clusters inside chromosomes.

Top of the list of techniques, though, are the ability to handle individual cells, in order to study their mRNA patterns, and the ability to do what is called spatial sequencing, which permits identification of the types of individual cell in thin sections of tissue mounted on microscope slides.

Cell-handling is Dr Quake's particular area of expertise. In 2012 he commercialised a microfluidic device which could break cells open to release their mRNA and analyse the resulting transcript patterns 96 cells at a time. Just a decade later, it is now possible to handle hundreds of thousands of cells at a time—the trick being to suspend each of them in a drop of fluid floating in a medium of oil and accompanied by a bead that has been tagged with molecules which act like a bar code to identify it.

Having characterised cell types in this way, the next stage is to seek them out in actual tissue. This is where the spatial sequencing comes in. As still happens in undergraduate histology labs, the tissue to be studied is embedded in a block of wax and that block is cut into thin slices with a sharp knife. Each of these slices is then laid on a microscope slide.

The next stage in classical histology would be to use a chemical stain to show up the individual cells. In this case the stain is made of single-stranded DNA molecules that have had fluorescent tags attached to them. These will stick only to complementary RNA molecules in the slice, thus marking only cells containing RNA relevant to the cell type under study.

The slides so mapped are, in essence, the pages of the atlas—or, more accurately, pages in one of the various volumes of the atlas that are being created, for each organ has its own volume, and there are volumes, too, for various stages of life, particularly pre-partum, and for diseased tissues as well as healthy ones.

That last is especially important, for the ultimate purpose of the exercise is to improve human health. As the diagram shows, separate atlas volumes have so far been created of diseased tissue in 15 organ systems that are common to both sexes. They are also available for the male and female reproductive systems, and for developing fetuses. Dr Regev outlined to the meeting four examples of where this approach has already made a difference.

The first is in transforming understanding of cystic fibrosis, an illness caused by a person inheriting two broken versions of a gene called *CFTR*, one from each parent. Lack of a working *CFTR* gene results in the mucus produced by cells lining the airways of the lungs being too thick. That makes breathing difficult and encourages infections, shortening the lives of sufferers.

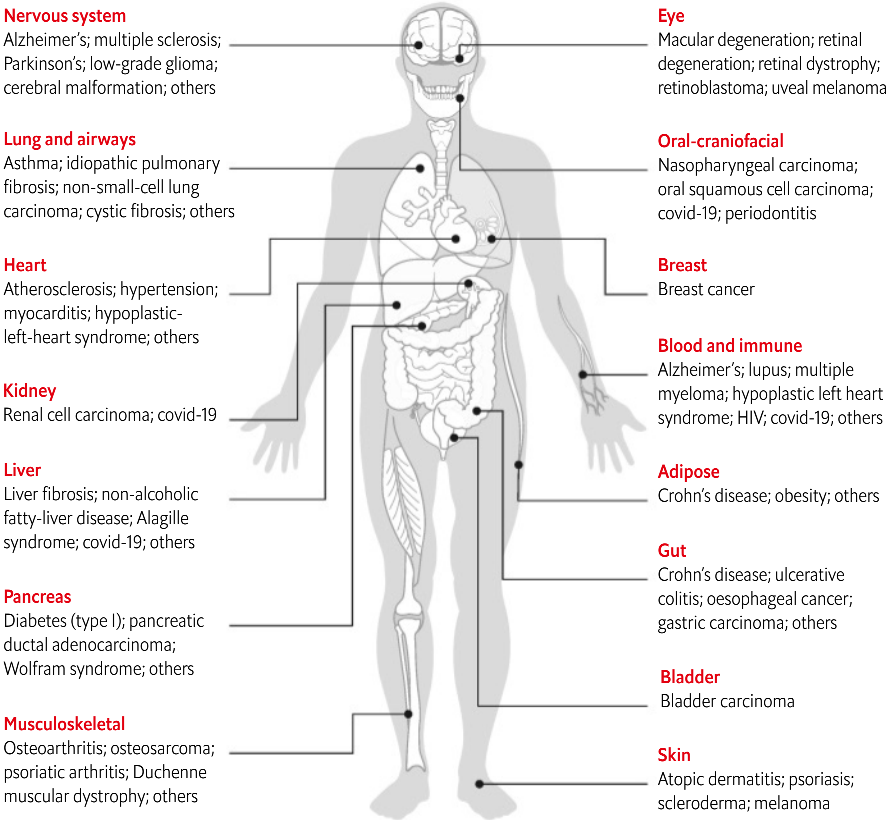
Those who study cystic fibrosis had known all this for a long time. What they had not known (though they thought they did) was which of the lungs' cells were expressing *CFTR*. By studying transcript patterns, cell-atlas researchers discovered that those which do this are a rare and hitherto unknown type that they have dubbed ionocytes (some of which are pictured at the beginning of the story). This discovery is now changing the direction of cystic-fibrosis research.

Gut-cell atlas researchers have similarly discovered entirely new cell types—which might thus become targets for drug treatment—involved in inflammatory bowel disease. And those working on the cancer-cell atlas can predict from mRNA profiles whether or not a case of melanoma will respond to immunotherapy.

Dr Regev and Dr Teichmann are particularly proud, though, of the atlas's role in the response to covid-19. As is the case with all viruses, SARS-CoV-2, the causative agent of covid, gains entry to cells by latching onto particular molecules, usually proteins, sitting in their surface membranes. Once the relevant proteins for SARS-CoV-2's cell entry were identified, researchers around the world were able to go through the atlas looking for cell types that express ACE2 and TMPRSS2, the proteins in question. That enabled them to pinpoint tissues beyond the respiratory tract which would also probably be harmed by the infection, such as the liver, heart and kidneys (a cell from which is pictured on the previous page, with SARS-CoV-2 particles budding from its surface membrane).

Other medical uses to which cell atlases may be put include identifying the best candidates for cell engineering (the employment of genetically modified cells as therapies), the mass screening of potential drugs to see their separate effects on particular cell types, and the design of organoids, which are small simulacra of actual organs, using which experiments can be carried out that would not be possible on people. The Human Cell Atlas will, in short, turn the human body into *terra* far less *incognita* than it previously was, and make it much easier to mend when it goes wrong. It will, in other words, carry on where the Human Genome Project left off. And now, at last, you have heard of it. ■

→ Cell atlases have been collected for a broad range of diseased organs and tissues*


Nervous system
Alzheimer's; multiple sclerosis; Parkinson's; low-grade glioma; cerebral malformation; others
Lung and airways
Asthma; idiopathic pulmonary fibrosis; non-small-cell lung carcinoma; cystic fibrosis; others
Heart
Atherosclerosis; hypertension; myocarditis; hypoplastic-left-heart syndrome; others
Kidney
Renal cell carcinoma; covid-19
Liver
Liver fibrosis; non-alcoholic fatty-liver disease; Alagille syndrome; covid-19; others
Pancreas
Diabetes (type I); pancreatic ductal adenocarcinoma; Wolfram syndrome; others
Musculoskeletal
Osteoarthritis; osteosarcoma; psoriatic arthritis; Duchenne muscular dystrophy; others
Eye
Macular degeneration; retinal degeneration; retinal dystrophy; retinoblastoma; uveal melanoma
Oral-craniofacial
Nasopharyngeal carcinoma; oral squamous cell carcinoma; covid-19; periodontitis
Breast
Breast cancer
Blood and immune
Alzheimer's; lupus; multiple myeloma; hypoplastic left heart syndrome; HIV; covid-19; others
Adipose
Crohn's disease; obesity; others
Gut
Crohn's disease; ulcerative colitis; oesophageal cancer; gastric carcinoma; others
Bladder
Bladder carcinoma
Skin
Atopic dermatitis; psoriasis; scleroderma; melanoma

*Studies of people with common complex diseases, cancers, rare diseases and infectious diseases. Fetal development, male and female reproductive organ profiles not shown

Source: "Impact of the Human Cell Atlas on medicine", *Nature Medicine*, Dec 2022

The ocean and climate change

Signals and noise

WASHINGTON, DC

Understanding how the ocean circulates is hard

For *Homo sapiens*, a dry-land species, discussions of the climate and how it is changing tend to revolve around what is going on in the atmosphere. This is a dangerously parochial attitude, for the atmosphere is but one of two fluid systems circulating above Earth's solid surface. The other, the ocean, is in many ways the more important of the pair.

It is the circulation of the ocean which, by redistributing heat, limits the temperature difference between tropics and poles to about 30°C. Were the atmosphere alone responsible for moving heat, that difference would be more like 110°C. And, when it comes to anthropogenic global warming, the problem would be far greater without the ocean's buffering effect.

Not only does the ocean absorb heat which would otherwise remain in the air, it also swallows a third of the carbon dioxide emitted by human activity. Though that makes seawater more acid (or, strictly speaking, less alkaline), which may harm some marine species, much of the CO_2 involved ends up in the abyss, where it can cause no greenhouse effect, and where it is likely to remain for many centuries.

The poverty of human understanding of ocean circulation, compared with that of the atmosphere, is therefore lamentable. And the AAAS meeting was treated to an excellent lamentation on the matter by Susan Lozier of the Georgia Institute of Technology, who was also last year's president of the American Geophysical Union.

Oceanographers worked out in the second half of the 20th century that the system's engine room is in the North Atlantic. Here, in a process called the Atlantic meridional overturning circulation (AMOC), water moving up from the tropics cools, thus increasing in density, until it becomes so heavy that it starts to sink, pulling more water up from farther south to replace it. Having descended as much as 3km, it then heads south itself.

Though some oceanic overturning of this sort goes on elsewhere, 90% of it happens in the North Atlantic. And it is this North Atlantic overturning which drives what is often described as a planet-spanning conveyor belt of connected currents.

That, at least, is conventional thinking. But Dr Lozier reckons it a bad analogy. A conveyor belt conveys an image of smooth and linear progress. This belt, though, jerks around all over the place, making it far harder to discover what is going on.

A smoothly moving belt need be examined only occasionally to check if its rate of progress is varying. So when, in 2005, a paper in *Nature* reported, on the basis of the five pertinent shipborne surveys which had been made since 1957, a 30% drop in the volume of AMOC between 1992 and 2004, there was serious concern. If such a fall continued, it would change weather patterns, particularly in Europe, by altering planetary heat distribution. It would also reduce the rate at which CO_2 was carried into the deep ocean.

As it happened, though, 2004 was a turning-point in observations of what is going on, for it saw the beginning of the deployment of a set of recording instruments which are now known as RAPID AMOC. These monitor the Atlantic a couple of degrees north of the Tropic of Cancer, the part of the world where the surveys reported in the *Nature* paper had been conducted. RAPID AMOC was joined in 2014 by an arctic counterpart, OSNAP, the Overturning in the Subpolar North Atlantic Programme.

The upshot has been the discovery that the rate of overturning can vary, apparently at random, as much as six-fold during the course of a year. The fall described in the *Nature* paper was an artefact of an impoverished data set.

Another finding of OSNAP has been that the details of where overturning happens in the North Atlantic are not as models had predicted. Most turnover, it turns out, occurs on the east side of the ocean, not the west, as previously believed. Though this may not matter much in the grand scheme of climate change, it is a further example of how poorly people have understood what is going on at sea.

The next step for OSNAP is to extend its remit into looking at carbon dioxide uptake. And more systematic studies are getting going in other parts of the ocean, too, as landlubbing humans are, at last, taking proper notice of the hitherto-neglected 71% of the surface of the planet they are pleased to call "Earth", but which might, in truth, be better dubbed "Sea". ■

Finding out if AMOC is going amok

Chromosomal deletions and neurology

Double or quits?

WASHINGTON, DC

Stretches of DNA that are often deleted or repeated can shed light on the brain

It is sad, but true, that much of what is known about how human brains work has been learned by studying brains that are broken. Injuries caused by disease or accident show, from the list of functions thus disabled, the jobs of the part of the brain that has been damaged. Similarly, "injuries" to the genome, resulting in the deletion or duplication of stretches of DNA, sometimes have clear effects which can illuminate the functioning of healthy brains. At the AAAS meeting Karen Berman of America's National Institute of Mental Health and Carrie Bearden of the University of California, Los Angeles, told participants of the latest finding concerning two of these genetic injuries.

Some segments of the genome are at particular risk of being lost or duplicated during the process of meiosis, when pairs of chromosomes swap genetic material prior to the formation of eggs and sperm. The reason is that they are flanked by stretches of DNA which have matching sequences of genetic letters. These matching flanks can confuse the molecular machinery that does the swapping. Sometimes this confusion causes the pertinent section to be left out. Sometimes the section

▸▸

in question ends up duplicated. Any individual inheriting a chromosome so altered will thus have either a deficiency or a surplus of the genes that are part of the affected section.

Dr Berman works on part of chromosome 7, the deletion of which causes Williams syndrome, identified in 1961 by a doctor of that name. Dr Bearden works on DiGeorge syndrome, likewise eponymously identified in 1968, and caused by a deletion of part of chromosome 22. Both have counterparts, noted more recently, that result from an extra copy of the labile chromosomal section. As the two researchers explained, comparing the under- and over-representations of these sections has deepened understanding of the neurological roles of the genes thereon.

People with Williams syndrome have a range of symptoms. Some are anatomical, such as a characteristic face shape. Others are behavioural—a tendency to be talkative, to be sociable, to be good at recognising faces (though otherwise poor at visual-spatial tasks) and to have good empathy with others. In essence, these are the opposite of autism. Those with the syndrome's converse, known as Dup7, have a different face shape. They also learn to talk later than normal, are bad at recognising faces (though otherwise good at visual-spatial tasks), and are unsociable. These latter traits are those associated with autism.

Dr Berman has shed light on the role in this of two genes, *GTF2I* and *LIMK1*, found in the affected region. *GTF2I* encodes a type of protein called a general transcription factor. Transcription factors initiate production of RNA copies of genes that then act as instructions for making proteins. As that suggests, *GTF2I* is involved in many such initiations, which may help explain Williams syndrome's disparate manifestations. *LIMK1* encodes an enzyme known to be involved in brain development.

Hard copies

Dr Berman and her group have demonstrated correlations between the "doses" of these genes (whether there are one, two or three copies) and the sizes of affected brain areas. Magnetic-resonance imaging (MRI) showed that the brain's total volume increases with the number of copies of the affected chromosomal region (so is smaller than normal with the deletion, and larger than normal with Dup7). But all of this growth happens in the biggest part, the cerebrum. In the second-biggest part, the cerebellum, the reverse happens.

She has now narrowed things down. Within the cerebrum, she has found, the amount of grey matter in an area called the intraparietal sulcus, which is known to be involved in visual attention (and thus visual-spatial awareness), is dose-dependent on *LIMK1*. In contrast, the volume of another area, the insula, which has been linked to emotions such as compassion, is dependent on the dose of *GTF2I*. Those findings nicely match genes to brain function.

Dr Bearden had a similar approach with DiGeorge syndrome and its opposite. As with Williams and Dup7 syndromes, deleting or adding part of a chromosome has many effects. In this case, one of the most intriguing is that deletion often results in symptoms of schizophrenia, while addition protects against this condition.

Using MRI, Dr Beardon was able to correlate all of this with systematic differences in the thicknesses and surface areas of parts of the cerebral cortex. Those with a deleted segment had thicker, but less folded cortices than those with intact chromosomes. Those with a duplication had thinner, but more folded cortices.

How an extra copy of this section of DNA protects against schizophrenia is not yet clear, but investigations continue. If it can be determined, that might be an important step towards treating this troublesome condition. ■

Silver and democracy

Piecing it together

WASHINGTON, DC

Mercenaries armed with newfangled coins may have brought about democracy

IN THE VIEW of many, money corrupts democracy. In the view of Francis Albarède, however, it was money, in the form of coined silver, which created democracy in the first place.

Dr Albarède is a geochemist at the École Normale Supérieure in Lyon, France. His definition of "geochemistry" stretches, however, well beyond many people's, into political and economic history. In particular, he has just finished running the European Research Council's SILVER (Silver Isotopes and the Rise of Money) project. This, by studying the isotopic composition of ancient silver coins, has tried to draw conclusions about where the metal in a coin was mined, and thus about patterns of trade.

Dr Albarède explained to the AAAS meeting how, in his opinion, the trick of turning silver into small discs of more or less constant weight and purity, certified by authority, had catalysed the overthrow of the oligarchies of dozens of Greek city states, most notably Athens, in the sixth and fifth centuries BC, and their replacement with versions of the idea that all free men should share in governing the polity they live in.

Both the silver and the free men came, in his interpretation of events, from the contemporary Persian empire's habit of hiring Greeks as mercenary soldiers. Hoplites, the heavily armed infantrymen who formed the core of Greek armies of this period, were much in demand as soldiers of fortune, and many found employment in non-Greek armies—not infrequently fighting their fellow Greeks.

Persia was a particularly large customer during its wars of expansion around the end of the sixth century, and frequently paid its hoplite recruits in the newfangled medium of silver coins. These were a form of easily portable and exchangeable wealth invented in the kingdom of Lydia, one of Persia's conquests, and adopted by Cyrus, the Persian empire's founder. Though many Greek city states had begun to take up Lydia's invention, too, meaning coins were a familiar idea, when these men returned home, as rich, metaphorically, as Croesus, the Lydian king whom Cyrus had overthrown, they upset the political applecart by forming the ambitious middle class that is the *sine qua non* of all successful revolutions.

No vote for you, I'm afraid

Elsewhere, though the advantages of coinage were quickly appreciated throughout the Mediterranean and near-eastern world, this sudden influx of money and men did not happen, so the powers-that-were, were able to adjust. But in many Greek cities the local oligarchs could not resist the tide of mercenary silver, and the rule of free men (though not of women or slaves, obviously—for nobody was yet that radical) took over.

Culture

Covid-19 in China

How it was done in Wuhan

The Chinese government wants to control the narrative of covid-19. A few brave voices have told a different story

Deadly Quiet City. By Murong Xuecun. *New Press; 336 pages; $27.99. To be published in Britain by Hardie Grant in May; £14.99.*
Wuhan Diary. By Fang Fang. Translated by Michael Berry. *HarperVia; 400 pages; $17.99. HarperNonFiction; £11.49*

CHINA’S NEW mantra is unequivocal. The country has won a “major and decisive victory” over covid-19. The outgoing prime minister, Li Keqiang, repeated this phrase on March 5th in a speech at the opening of the annual session of China’s parliament. He cautioned the nearly 3,000 masked delegates that the pandemic was not over, but he did not suggest the virus needed to be crushed, a feat that China spent nearly three years battling to achieve, until late in 2022. The Communist Party wants to move on from—and wants citizens to forget—the trauma of deaths and lockdowns.

The party is a master at controlling and confusing memories. Millions died in the famine triggered by Mao Zedong’s Great Leap Forward of the late 1950s. But poor harvests were officially blamed on natural disasters. Without a free flow of information to help them identify the real culprit, most Chinese bought the party line. Likewise, many who have grown up since the Tiananmen Square protests of 1989 are confused about what happened. Some sympathise with the party’s decision to crush what were in fact peaceful demonstrations, believing the official narrative that large riots had broken out.

The story of how covid emerged late in 2019, and of how the Chinese government responded, is another that will be clouded in Chinese minds by disinformation and lies. There will be no public inquiry in China into how officials handled the outbreak or the harsh and protracted lockdowns in city after city. There will be no open investigation into where the virus came from, or whether better safety precautions—say in a lab or a wet market in the central Chinese city of Wuhan—might have prevented a global disaster. Victory will be the only permissible verdict.

→ Also in this section

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70 Eleanor Catton’s new novel

This enhances the value of the few independent accounts that Chinese people have written of how the pandemic unfolded in their country. It has taken much bravery to produce them. Several citizen journalists have suffered the consequences of reporting independently: imprisonment, police intimidation to keep them silent, or simply being “disappeared”.

Yet one author, Murong Xuecun (the pen name of Hao Qun), managed in 2020 to interview people about their experiences of Wuhan’s 76-day lockdown at the start of the pandemic and to write a book, “Deadly Quiet City”. Before its publication—last year in Australia and now elsewhere—he fled abroad. In the preface he says that recalling his efforts, undertaken while dodging the Chinese police, still gives him a “heart-sinking, bitter taste of terror” even though he is now “out of their reach”.

Mr Murong’s book follows another by a

prominent Chinese writer about Wuhan's shutdown: "Wuhan Diary" by Fang Fang (whose real name is Wang Fang and whose home town is Wuhan). Published in 2020, it is a translation of her posts to Chinese social media in that period. Like Mr Murong's, it is scathing about the government's response, including the initial attempts to suppress news of the disease's spread. She describes how "ultra-leftists", enraged by her criticisms, bombard her with online tirades. She hints that the trolls may have government backing.

Ms Fang's journal was written from home, drawing on information provided by her extensive network of contacts in Wuhan. Mr Murong's book takes a different approach. Each of his chapters focuses on one of eight protagonists, ranging from a doctor at a small community hospital to the unlicensed driver of a motorcycle taxi and another citizen journalist, Zhang Zhan, whose daring efforts earned a four-year jail sentence.

It is a harrowing collection of stories, grippingly narrated. The doctor finds himself in a baffling new world. Dispatched to a busy isolation station, where people with suspected covid are sent, he finds that the results of virus tests are treated as classified. Bizarrely, security guards at the entrance may see the results, but when he asks them about a particular person's test, the answer is: "That's secret. Can't tell you." Because the doctor's hospital has to focus on coronavirus cases, its revenue from charges for other kinds of treatment dries up. So for months he has to work unpaid.

Memory and forgetting

The book is packed with detail of a dysfunctional medical system that cannot cope with the deluge of patients, leaving many to die at home, in hospital corridors or on the streets. At another isolation station a seriously ill patient is ignored. His wife begs neighbourhood officials for help. "Those fuckers just watched Mum kneeling there," recalls their son. Eventually the officials give in and arrange for the man and his wife to be taken to a hospital, where he dies.

Ms Zhang's bravery is astonishing. Even before setting out on her reporting trip to Wuhan, the then 36-year-old lawyer had a record of snubbing authority to a perilous degree. She angered the government with her posts online, including some that attacked corruption in the financial industry. Early in 2019 she staged a protest in Shanghai, where she was living, against police harassment of her: she held up a banner in a subway station saying, "Down with the Communist Party, End Socialism". Later that year she did it again, walking along a busy street carrying an umbrella adorned with a similar slogan. She was detained both times. The second spell behind bars included being shackled hand and foot for several days to the floor of a cell, in her own excrement.

Ms Zhang spent 104 days in Wuhan, posting essays and videos about the lockdown. She quixotically protested against the authorities' efforts to keep everyone indoors by repeatedly pushing down a gate they erected to stop people in her neighbourhood leaving the area. She "fought a battle knowing there was no prospect of victory, yet she still charged onto the battlefield," writes Mr Murong.

Even at that time, Ms Fang was worrying about the post-covid future. "What I fear is that once people get back to their normal, happy lives, no one will be willing to revisit this painful moment," she records in her diary. "If you don't pursue this and hold people accountable, at the end of the day, the biggest victim will be the nation itself." The party begs to differ. ■

Environmental history

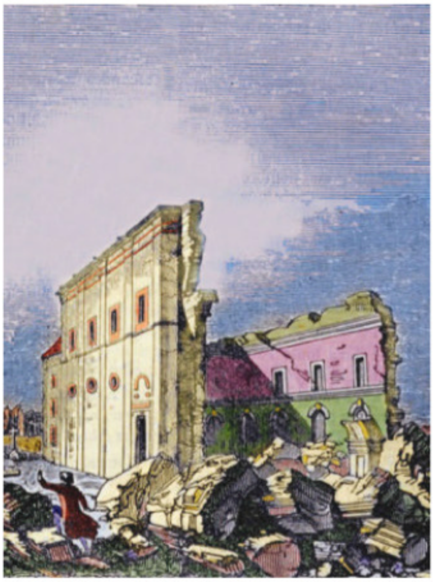
Nature and nurture

A fresh take on how the environment shapes history and vice versa

The Earth Transformed. By Peter Frankopan. *Knopf; 736 pages; $40. Bloomsbury; £30*

People are exercised by three things above all else, wrote Voltaire in the mid-18th century: climate, government and religion. He was ahead of his time in putting climate first. Peter Frankopan opens his new book with Voltaire's comment and proceeds to show how all manner of natural disasters have shaped human history: not just floods and storms, but earthquakes, volcanic eruptions and crashing meteorites, too.

Voltaire was fascinated by the earthquake that struck Lisbon in 1755, which he incorporated into his philosophical novel "Candide". Tremors began on the morning of November 1st, All Saints Day, when most of the locals were at mass. A huge tsunami followed. Soon the Portuguese capital lay in ruins. Tens of thousands of people are thought to have died, a big chunk of the city's population.



The Earth shook in Lisbon

The earthquake and ensuing upheaval epitomise the way natural disasters can change mindsets. It struck as the vogue for scientific observation was beginning to undermine the church's prerogative in explaining life on Earth. The meaning of the calamity was a matter of dispute between, on one side, modernising rationalists such as Voltaire and, on the other, believers, for whom it was a sign of God's wrath.

Professor Frankopan, who teaches global history at Oxford, has long been keen to expand Westerners' understanding of the past. "The Silk Roads", his book of 2015, was about Central Asia and early globalisation; it was followed three years later by "The New Silk Roads", modestly subtitled: "The Present and Future of the World". His latest book is, if anything, even more ambitious. In contrast to the study of history based on war, economics and political power (what some call "chaps and maps"), "The Earth Transformed" aims to put climate in its broadest sense at the centre of the story.

It canters through the formation of the Earth, with its shifting land masses and pop-up volcanic islands. Then it focuses on how humanity has "exploited, moulded and bent the environment to its will, both for good and for ill", beginning 12,000 years ago at the start of the Holocene period, when humans spread across the globe amid favourable conditions.

In roughly chronological order, and in his characteristically pacey style, Professor Frankopan traces how ice ages alternated with warmer periods; how resources came to be exploited around the globe; how climate influenced food production and the rise of cities; how, in turn, urbanisation

Back Story This means war

War is the theme of the Oscars—even in films that seem to be about something else

TOMORROW, ON THE mainland, "the Free State lads are executing a couple of the IRA lads," says a brutish policeman on Inisherin, a fictional island off Ireland's west coast. It is 1923 and civil war rages on. "Or is it the other way around?" Whoever is executing whom, he is heading over to lend a hand. "For six bob and a free lunch, I don't care."

"The Banshees of Inisherin" (pictured), which is up for nine Academy Awards at the ceremony on March 12th, is ostensibly the story of a ruptured friendship. But it is also a war film—even though the shooting remains out of sight across the water. It shares that theme with most of the Oscars front-runners. War rumbles through the nominations, on the surface or audibly below it.

On Inisherin, the row between Pádraic (played by Colin Farrell) and Colm (Brendan Gleeson) flares up in a time of war and mimics its rhythms. Life is too short to waste any more of it in nice-but-dull Pádraic's company, decides Colm, when he could be composing music for his fiddle. Pádraic disagrees about what matters, what lasts and whether the two are the same. Like many a *casus belli*, theirs seems both foolish and profound. Colm is a grouchy crank—or perhaps has seen life for what it is. And like many conflicts, theirs involves misunderstanding, escalation and self-mutilation: Colm resolves to chop off his fingers if Pádraic insists on speaking to him. Their private war makes them different people.

The sense of queasy intimacy with an enemy suffuses the most powerful scene in "All Quiet on the Western Front" (also nominated for nine Oscars). Stuck in a first-world-war shell hole with a French soldier, Paul (Felix Kammerer), the German protagonist, cannot decide whether to kill or embrace him. This is war as an industrial-scale, merciless hell. Surrendering troops are incinerated by flamethrowers, death is agonising and obscene.

The first German-made adaptation of Erich Maria Remarque's novel of 1928, "All Quiet on the Western Front" is plainly about war. But it is also about food. The soldiers talk and sing about it. They snatch it from dying comrades and pilfer it from locals. While the sybaritic top brass toss meat to their dogs, or query the freshness of their croissants, ordinary soldiers wolf down the rations in the trenches they storm. Their two primitive imperatives are to survive and to find something to eat, even at their peril.

"Top Gun: Maverick" (six nominations) has the outline and kit of a war film. At its daredevil climax, Maverick (Tom Cruise), back in his shades, leather jacket and cockpit after 36 years, must blow up a uranium-enrichment plant in a nameless rogue state. But the real clashes here are among the ego-addled American fighter pilots, and, above all, between Maverick's analogue heroism and the automated march of time. "The future is coming," a commander tells him, "and you're not in it." He'll see about that.

Storytelling, it is true, always runs on conflict. Man versus fate, or nature, or society, or another man (or woman): typologies of it abound online and in creative-writing seminars. As Kurt Vonnegut enjoined, "every character should want something, even if it is only a glass of water." Someone or something gets in the way, and the ensuing friction forges characters, generates tension and drives the plot. Even so, the martial drumbeat of this year's Oscars seems loud, chiming with the concussions from Ukraine and the bellicose timbre of wider politics.

Take the suite of conflicts in "Tár" (also six nominations). At first the film seems to be a dispatch from the cultural sort of war, as Lydia Tár (Cate Blanchett), maestro of the Berlin Philharmonic, riles a class of young musicians with her old-school insistence on separating art from the artist. When a student who identifies "as a BIPOC pangender person" has issues with "white, male, cis composers", she brusquely says people ought not to be "so eager to be offended".

But the hot-button spats turn out to be camouflage for the film's more important war: between Tár and her past and conscience. A walking, baton-wielding will to power, she tyrannises her underlings, exploits her rights of patronage, cheats on her wife, drives fast and punches hard. Yet she is haunted, and undone, by uncanny motifs and memories—disembodied screams, the image of a maze, a head of red hair.

In a sequence that hovers between realism and nightmare, Tár descends into a basement and is stalked by a spectral dog. Down there, below the surface, an elementary, eternal conflict is fought and often lost: the one against yourself.

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promoted the spread of disease; and how, over the past few decades, anxiety about the Earth's ecology has become entrenched. He shows, in other words, both how the climate shaped modern life and how it increasingly defines the world's economic and political tensions.

This is not a new field. In his study of the Mediterranean, published almost 75 years ago, Fernand Braudel, a French historian, identified geography and the environment as the bedrock layers of history. Still, "The Earth Transformed" raises fresh and urgent questions. Which will be the dominant countries of the future? Will access to water be more important than access to mineral resources? How can India, Pakistan and Bangladesh clean up the filthy air that chokes their citizens if they fail to co-operate amicably?

The author does not claim to be able to see into the future. Above all, his work will encourage readers to think differently about the past. He highlights new forms of computer modelling and data analysis that are shedding light on little-known areas—infrared spectroscopy that has allowed researchers to study social change in the 12th century in the area between the Shashi and Limpopo rivers of southern Africa, for example, or the recent identification of the process whereby seeds were preserved in the pits and cesspits of Jerusalem under the Abbasid caliphate. That has offered fresh evidence about the westward spread of crops in the early Islamic period.

In these ways, bygone people and societies that had seemed mute are finding a voice. By the same token, pressure to acknowledge climate-changing sins of the past—and demands for better policies now—are becoming harder to resist. ■

World in a dish

Night hawkers

NEW YORK

Singapore's unique dining style comes to Manhattan

COOKING A DISH from one culture while living in another is simply a matter of ingredients and technique. Translating an entire dining style is harder. No matter how tasty the *pâté de campagne*, how artfully nicotine-stained the walls and how much Édith Piaf warbles from the speakers, eating at a bistro in Phoenix will always be different from eating at one in Lyon. The trick, as a new Singapore-style hawker centre in midtown Manhattan shows, is knowing which parts of the experience can be transplanted successfully, and which should be left at home.

In Singapore, hawker centres are large, semi-outdoor spaces (they have roofs but no walls). Food stalls line the perimeter while customers stake out seats at tables in the middle. Ubiquitous and cheap, they are integral to eating in Singapore, where your columnist once lived. They let groups of friends with different tastes and dietary requirements eat together. They are unpretentious and fun: vendors banter and flirt with their customers and the open setting encourages relaxed conversation.

Urban Hawker in Manhattan hews to the same basic design principles, with vendors along the walls and communal tables in the centre. The hawkers sell similar foods to their Singaporean counterparts, including creditable *prata* (a folded fried bread of South Indian origin, served with *dhal* that was sweeter and less spicy than it should have been), greasy and delicious *char kway teow* (fried flat noodles), and properly chewy if slightly ungenerous *satay* with *lontong* (grilled skewered meat with rice cubes). A sublime chicken rice could hold its own with any stall in Singapore, the poached chicken soothingly soft and springy, every grain of rice distinct yet slicked with rich chicken flavour, the sauces—thick soy, fiery chilli and ginger—complementary rather than overpowering.

But unlike Singapore's hawker centres, Manhattan's is indoors. It has a cocktail bar, whereas Singapore's serve nothing stronger than Tiger, the local lager. And the prices are high: New Yorkers will evidently pay around $20 for a plate of chicken rice that would cost a few Singaporean dollars (a couple of American ones).

In Singapore, everyone eats at hawker centres because they are everywhere and serve familiar food cheaply. In New York that role mainly falls to halal carts and fast-food chains. Urban Hawker's target clientele is posher: the sort of people who know what hawker centres are despite living halfway around the world. Dining there is an event rather than a habit. In other words, it sells cachet as well as food, like the many French bistros outside France that serve *cuisine grand-mère* at prices many actual grandmothers cannot afford.

Compare the New World Mall's food court (in effect, an indoor hawker centre), a 40-minute subway ride away in Queens. It is at least as delicious and a lot cheaper. But it is authentically Asian-American and aimed at locals in New York's biggest Chinatown; other visitors need to do some translation work. Urban Hawker gives diners a helping hand—and reaches into their wallets with the other one. ■

Hollywood moguls

Sins of the father

Unscripted. By James Stewart and Rachel Abrams. *Penguin Press; 416 pages; $32. Cornerstone Press; £25*

"WHY ARE you so mean to people?" asked one of Sumner Redstone's many girlfriends, after he had summoned a chef to their table just to throw an overcooked steak at him. "I don't care," replied the mogul. "I'm going to hell anyway."

Though he boasted he would live for ever—"I eat and drink every antioxidant known to man"—Redstone died in 2020, aged 97. James Stewart and Rachel Abrams, two *New York Times* journalists, have put together a deeply reported account of his final years, delving in sometimes excruciating detail into his extraordinary antics in both the boardroom and the bedroom.

After a scholarship to Harvard, where he learned Japanese and later helped crack codes in the second world war, Redstone saw off his brother to inherit control of the Boston-based family business, National Amusements, which ran two drive-in cinemas. He went on to amass one of the world's largest collections of entertainment assets, with controlling stakes in Viacom and CBS, combined before his death to form what is now Paramount Global.

Though he earned a multi-billion-dollar fortune and a star on the Hollywood Walk of Fame, he was also "banned from every restaurant in LA", in the words of one long-suffering dining companion. He described Barack Obama using the N-word and faxed his daughter, Shari, to call her the C-word, copying executives at Viacom, where she was on the board. He harassed ▸▸

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his female staff, asking an attendant on a company jet if she liked to be spanked.

His exploitation of younger women—and, as he became infirm, their exploitation of him—is the focus of the first half of “Unscripted”. To buy their affection and discretion, Redstone doled out favours, gifts and cash. Favourites got career leg-ups; one, a singer in a band called the Electric Barbarellas, performed on CBS at his insistence. Towards the end of his life, two live-in girlfriends-cum-nurses extracted $150m from him. Finally his family evicted the pair, with the help of private detectives and a lot of lawyers.

The second half of the book concerns the Redstone businesses, where Sumner remained executive chairman even as he had to be carried into annual meetings at which he barely spoke. Later, as his voice deteriorated, he had a laptop programmed to say phrases including “Would you like some fruit salad?” and “Fuck you.” After a legal hearing in which he struggled to recall his birth name (Rothstein, later anglicised by his father), investors began to fret. Eventually, following a cognitive test in which he could not perform basic arithmetic or spelling, he stepped down.

This set the stage for a boardroom battle between the Redstones, now led by Shari, and CBS’s management, principally Leslie Moonves, a former actor who was chairman and chief executive and stood to run both CBS and Viacom should they be combined. Mr Moonves, named the fourth-most-powerful person in entertainment by the *Hollywood Reporter*, was a hit with investors. Yet after Harvey Weinstein was unmasked as a serial sexual abuser, numerous women accused Mr Moonves of past assaults, which he has always denied.

The mainly elderly, male board of CBS was initially inclined to accept these denials. “We all did that,” said Arnold Kopelson, a director. Even some of those claiming to help the alleged victims appeared to take advantage of them, such as the agent who used his client’s claims to press Mr Moonves to give parts to other actors on his books. Only investigations by the *New Yorker* and *Vanity Fair* (whose journalists were told by CBS’s communications chief to “have some fucking ethics” and “find a real story”) brought Mr Moonves down.

Like a lot of reality TV, “Unscripted” is riveting because its cast is so awful. Shouting matches in Nobu, restraining orders, custody battles (over children and pets), non-disclosure agreements and psychics all feature. One of the few sympathetic characters, Shari Redstone, at least gets a Hollywood ending. After a reconciliation with her father, she sees off Mr Moonves and becomes chairwoman of the newly combined Paramount. The book ends at Sumner Redstone’s funeral, with Shari singing “My Way”. ■

Fiction from New Zealand

The profits of doom

Birnam Wood. By Eleanor Catton.
Farrar, Straus and Giroux; 432 pages; $28.
Granta; £20

“The Luminaries”, the novel that made Eleanor Catton, at 28, the youngest-ever winner of the Booker prize, is set in a frontier town in New Zealand. Published in 2013, it opens in the smoking room of a hotel where an assortment of strangers are dressed in “frock-coats, tailcoats, Norfolk jackets with buttons of horn, yellow moleskin, cambric and twill”. In Ms Catton’s new novel, “Birnam Wood”, the characters wear dark gloves, balaclavas and jackets zipped to the throat, listening out for a “shout of warning, or a gunshot, or the now unmistakable sound of a drone”. The setting is still New Zealand, but instead of 1866 the date is 2017.

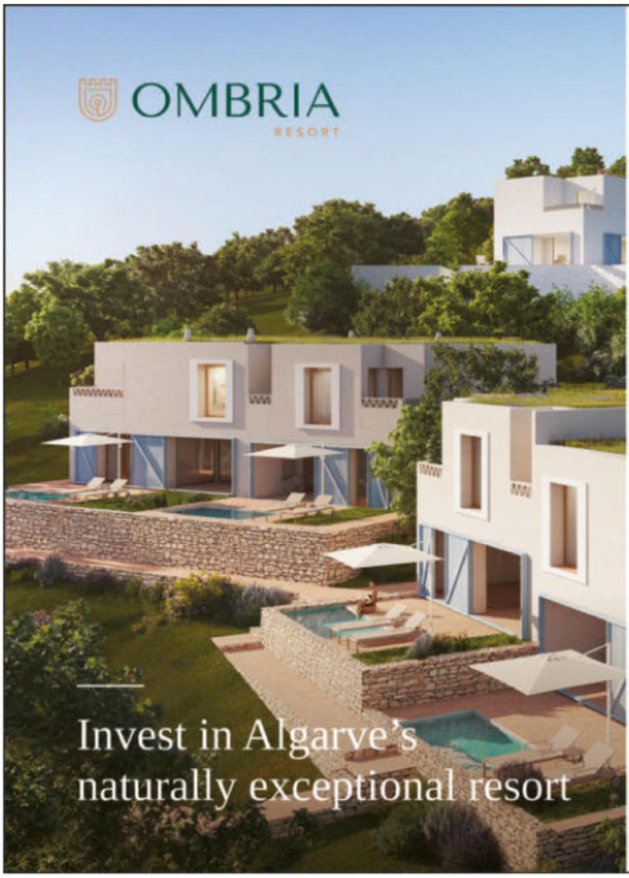
Birnam Wood is the name of a witchy guerrilla gardening group run by a charismatic ideologue called Mira Bunting, a horticulturalist by training, and her seemingly quiet and devoted sidekick, Shelley Noakes. For years the group has cultivated small plots of urban land around care homes, nursery schools and the car parks of dental surgeries. Their equipment is mostly salvaged and they barter what they grow; none of them is paid and everything they own is commonly held. Seeds are one of the only things they spend money on. Mira works full-time for the collective. Her ambition is for it to make “radical, widespread and lasting social change”.

When an area of rich arable land in New Zealand is suddenly abandoned after a late-summer landslide closes the nearest pass for several months, Mira senses that Birnam Wood may have found its playground. But someone else is interested in the place: an American tycoon with a calculating mind and a preternaturally calm exterior. His name is Robert Lemoine (his surname is French for “monk”), and he is an aspiring “doomsteader”, someone who sets up home in preparation for civilisation’s collapse. At least, that is what Lemoine claims to be. He offers Birnam Wood a deal—and seed funding to massively expand its cultivation.

“Birnam Wood” is a taut novel about what it means to sup with the devil, distinguished by its character studies and the author’s sharp pen. She skewers anti-capitalist activists with the same relish she exhibits in chewing up the billionaire class. Lemoine turns out to be surprisingly attentive in bed, but he is also amoral and blind to his failings. Ms Catton is acute about the chippiness of even the most successful New Zealand men (marooned as they are at the edge of the world), the self-mythologising of middle-class do-gooders and the frictions that bind female friendships, while undermining them at the same time.

This book is not as self-consciously literary as “The Luminaries”. But with its deft plotting, penetrating observations and swirling, rhythmic sentences, “Birnam Wood” is a rare accomplishment: an intelligent and elegant thriller that is also a damn fine read.

Stand-off at the end of the world



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Comfortable, modern and welcoming: this three-floor, 277 sqm, luxury chalet in Soraga di Fassa (TN) is set in the green heart of the Dolomitic Alps. It was built in 1960 and renovated in 2000. Modern fittings, a private gym and wellness area with Turkish bath, authentic Alpine furnishings, with plenty of woodwork in both the interiors and the facade. Three bathrooms, 5 bedrooms, fully furnished eat-in kitchen for a total of ten rooms plus a 28 sqm double garage and ample outdoor parking.

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Economic & financial indicators

Economic data

	Gross domestic product				Consumer prices			Unemployment rate		Current-account balance	Budget balance	Interest rates		Currency units	
	% change on year ago				% change on year ago			%		% of GDP, 2023†	% of GDP, 2023†	10-yr gov't bonds latest,%	change on year ago, bp	per $ Mar 8th	% change on year ago
	latest		quarter*	2023†	latest		2023†								
United States	0.9	Q4	2.7	0.7	6.4	Jan	4.0	3.4	Jan	-3.0	-5.2	4.0	212	-	
China	2.9	Q4	nil	5.7	1.0	Feb	2.2	5.5	Jan‡§	1.9	-4.1	2.7 §§	18.0	6.97	-9.5
Japan	0.4	Q4	0.1	1.0	4.4	Jan	1.9	2.4	Jan	3.0	-5.9	nil	-8.0	137	-15.6
Britain	0.4	Q4	0.1	-0.3	10.1	Jan	5.9	3.7	Nov††	-3.2	-5.9	3.9	263	0.84	-9.5
Canada	2.1	Q4	nil	0.8	5.9	Jan	3.4	5.0	Jan	-1.2	-1.1	3.3	145	1.38	-6.5
Euro area	1.8	Q4	-0.1	0.7	8.5	Feb	5.9	6.6	Jan	1.0	-3.5	2.6	252	0.95	-3.2
Austria	2.6	Q4	-0.1‡	0.8	11.0	Feb	6.6	5.1	Jan	nil	-3.7	3.3	277	0.95	-3.2
Belgium	1.4	Q4	0.4	0.4	6.6	Feb	6.1	5.8	Jan	-1.9	-5.3	3.3	275	0.95	-3.2
France	0.5	Q4	0.3	0.5	6.2	Feb	5.0	7.1	Jan	-1.9	-5.3	3.2	281	0.95	-3.2
Germany	0.9	Q4	-1.7	-0.1	8.7	Feb	6.2	3.0	Jan	3.5	-2.0	2.6	252	0.95	-3.2
Greece	4.5	Q4	5.6	1.0	7.0	Jan	3.9	10.8	Jan	-6.0	-3.5	4.5	215	0.95	-3.2
Italy	1.4	Q4	-0.5	0.6	9.2	Feb	6.8	7.9	Jan	-0.5	-4.8	4.4	284	0.95	-3.2
Netherlands	3.0	Q4	2.5	0.7	8.0	Feb	7.1	3.6	Jan	6.3	-2.7	3.0	258	0.95	-3.2
Spain	2.7	Q4	0.9	1.4	6.1	Feb	4.3	13.0	Jan	0.3	-4.7	3.7	274	0.95	-3.2
Czech Republic	0.1	Q4	-1.4	-0.2	17.5	Jan	9.9	2.6	Jan‡	-1.0	-4.6	4.9	147	22.3	5.6
Denmark	1.7	Q4	3.5	0.8	7.7	Jan	5.0	2.8	Jan	9.0	0.5	2.9	249	7.05	-3.0
Norway	1.3	Q4	0.8	1.4	7.0	Jan	4.6	3.4	Dec‡‡	20.0	11.4	1.4	76.0	10.6	-15.5
Poland	0.6	Q4	-9.3	1.3	17.2	Jan	12.6	5.5	Feb§	-1.9	-3.0	6.3	144	4.43	2.5
Russia	-3.7	Q3	na	-2.4	11.8	Jan	7.3	3.6	Jan§	6.8	-4.6	10.8	-174	76.3	71.6
Sweden	-0.1	Q4	-2.0	-0.6	11.7	Jan	5.6	7.6	Jan§	3.0	-0.3	2.6	219	10.7	-6.7
Switzerland	0.8	Q4	0.1	0.9	3.4	Feb	2.2	1.9	Feb	6.5	-0.7	1.5	131	0.94	-1.1
Turkey	3.5	Q4	3.8	3.1	55.2	Feb	40.8	10.4	Dec§	-4.3	-2.4	11.5	-1356	18.9	-23.0
Australia	2.7	Q4	1.9	1.6	7.8	Q4	4.2	3.7	Jan	1.1	-2.1	3.8	153	1.51	-8.6
Hong Kong	-4.2	Q4	nil	3.4	2.4	Jan	2.3	3.4	Jan‡‡	3.5	-1.4	3.9	222	7.85	-0.4
India	4.4	Q4	-3.4	5.4	6.5	Jan	5.3	7.5	Feb	-1.4	-5.9	7.5	56.0	82.0	-6.3
Indonesia	5.0	Q4	na	4.7	5.5	Feb	3.9	5.9	Q3§	0.8	-2.8	7.0	28.0	15,435	-6.7
Malaysia	7.0	Q4	na	3.9	3.7	Jan	2.3	3.6	Dec§	2.3	-5.1	4.0	36.0	4.53	-7.7
Pakistan	6.2	2022**	na	2.2	31.5	Feb	9.9	6.3	2021	-4.9	-5.4	15.7 †††	442	277	-35.5
Philippines	7.2	Q4	10.0	4.8	8.6	Feb	5.7	4.8	Q1§	-3.0	-6.4	6.5	102	55.3	-5.4
Singapore	2.1	Q4	0.3	1.7	6.6	Jan	3.1	2.0	Q4	17.3	-0.4	3.4	153	1.35	1.5
South Korea	1.3	Q4	-1.6	1.3	4.8	Feb	2.8	3.6	Jan§	2.7	-2.4	3.7	100	1,321	-6.4
Taiwan	-0.4	Q4	-1.5	2.2	2.4	Feb	1.6	3.6	Jan	12.2	-2.0	1.2	52.0	30.8	-7.8
Thailand	1.4	Q4	-5.9	3.8	3.8	Feb	2.5	1.0	Dec§	2.1	-2.6	2.7	57.0	35.1	-5.4
Argentina	5.9	Q3	7.0	-0.2	98.8	Jan	90.6	7.1	Q3§	-1.0	-3.9	na	na	200	-45.7
Brazil	1.9	Q4	-0.9	1.0	5.8	Jan	4.8	7.9	Dec§‡‡	-3.0	-8.1	13.4	123	5.12	-0.6
Chile	0.3	Q3	-4.6	-0.6	11.9	Feb	7.5	8.0	Jan§‡‡	-4.3	-2.6	5.9	nil	804	1.1
Colombia	2.9	Q4	2.7	1.6	13.3	Feb	9.7	13.7	Jan§	-4.5	-4.4	12.4	260	4,738	-20.1
Mexico	3.6	Q4	1.8	1.1	7.9	Jan	5.9	2.9	Jan	-1.1	-3.8	9.3	98.0	17.9	19.5
Peru	1.7	Q4	-6.0	1.9	8.6	Feb	6.5	8.8	Jan§	-3.3	-1.6	8.1	162	3.78	-1.3
Egypt	4.4	Q3	na	3.0	25.9	Jan	19.2	7.2	Q4§	-2.9	-6.5	na	na	30.9	-49.0
Israel	2.9	Q4	5.8	3.0	5.4	Jan	3.4	4.3	Jan	4.0	-2.3	3.9	196	3.59	-8.1
Saudi Arabia	8.7	2022	na	2.8	3.4	Jan	2.2	5.8	Q3	6.5	1.6	na	na	3.75	nil
South Africa	0.9	Q4	-4.9	1.3	7.2	Jan	5.1	32.7	Q4§	-1.9	-4.8	10.2	-11.0	18.5	-17.4

Source: Haver Analytics. *% change on previous quarter, annual rate. †The Economist Intelligence Unit estimate/forecast. §Not seasonally adjusted. ‡New series. **Year ending June. ††Latest 3 months. ‡‡3-month moving average. §§5-year yield. †††Dollar-denominated bonds.

Markets

In local currency	Index Mar 8th	% change on: one week	% change on: Dec 30th 2022
United States S&P 500	3,992.0	1.0	4.0
United States NAScomp	11,576.0	1.7	10.6
China Shanghai Comp	3,283.3	-0.9	6.3
China Shenzhen Comp	2,114.9	-2.3	7.1
Japan Nikkei 225	28,444.2	3.4	9.0
Japan Topix	2,051.2	2.7	8.4
Britain FTSE 100	7,929.9	0.2	6.4
Canada S&P TSX	20,346.5	0.4	5.0
Euro area EURO STOXX 50	4,288.4	1.7	13.0
France CAC 40	7,324.8	1.3	13.1
Germany DAX*	15,631.9	2.1	12.3
Italy FTSE/MIB	27,911.5	2.2	17.7
Netherlands AEX	753.4	0.5	9.3
Spain IBEX 35	9,466.1	1.5	15.0
Poland WIG	61,096.3	1.0	6.3
Russia RTS, $ terms	951.4	-0.5	-2.0
Switzerland SMI	11,025.3	-0.3	2.8
Turkey BIST	5,438.4	2.2	-1.3
Australia All Ord.	7,503.9	0.6	3.9
Hong Kong Hang Seng	20,051.3	-2.8	1.4
India BSE	60,348.1	1.6	-0.8
Indonesia IDX	6,776.4	-1.0	-1.1
Malaysia KLSE	1,454.7	0.3	-2.7

	index Mar 8th	% change on: one week	% change on: Dec 30th 2022
Pakistan KSE	41,358.9	2.3	2.3
Singapore STI	3,226.9	-0.9	-0.8
South Korea KOSPI	2,431.9	0.8	8.7
Taiwan TWI	15,818.2	1.4	11.9
Thailand SET	1,612.6	-0.5	-3.4
Argentina MERV	250,911.8	0.5	24.2
Brazil BVSP*	106,540.3	2.1	-2.9
Mexico IPC	53,388.7	-0.2	10.2
Egypt EGX 30	16,315.6	-4.7	11.8
Israel TA-125	1,779.4	2.4	-1.2
Saudi Arabia Tadawul	10,410.2	2.1	-1.3
South Africa JSE AS	77,741.8	-1.1	6.4
World, dev'd MSCI	2,725.2	0.7	4.7
Emerging markets MSCI	978.1	-0.6	2.3

US corporate bonds, spread over Treasuries

Basis points	latest	Dec 30th 2022
Investment grade	147	154
High-yield	438	502

Sources: Refinitiv Datastream; Standard & Poor's Global Fixed Income Research. *Total return index.

Commodities

The Economist commodity-price index 2015=100	Feb 28th	Mar 7th*	% change on month	% change on year
Dollar Index				
All Items	156.8	157.6	-0.8	-22.4
Food	142.0	142.3	0.1	-17.1
Industrials				
All	170.6	171.8	-1.5	-26.0
Non-food agriculturals	126.1	123.6	-5.2	-34.8
Metals	183.9	186.2	-0.7	-24.0
Sterling Index				
All items	197.1	198.7	-1.6	-15.9
Euro Index				
All items	162.8	164.8	nil	-20.4
Gold				
$ per oz	1,835.6	1,826.0	-2.6	-11.2
Brent				
$ per barrel	83.1	84.0	0.1	-34.5

Sources: Bloomberg; CME Group; Cotlook; Refinitiv Datastream; Fastmarkets; FT; ICCO; ICO; ISO; Live Rice Index; LME; NZ Wool Services; Thompson Lloyd & Ewart; Urner Barry; WSJ. *Provisional.

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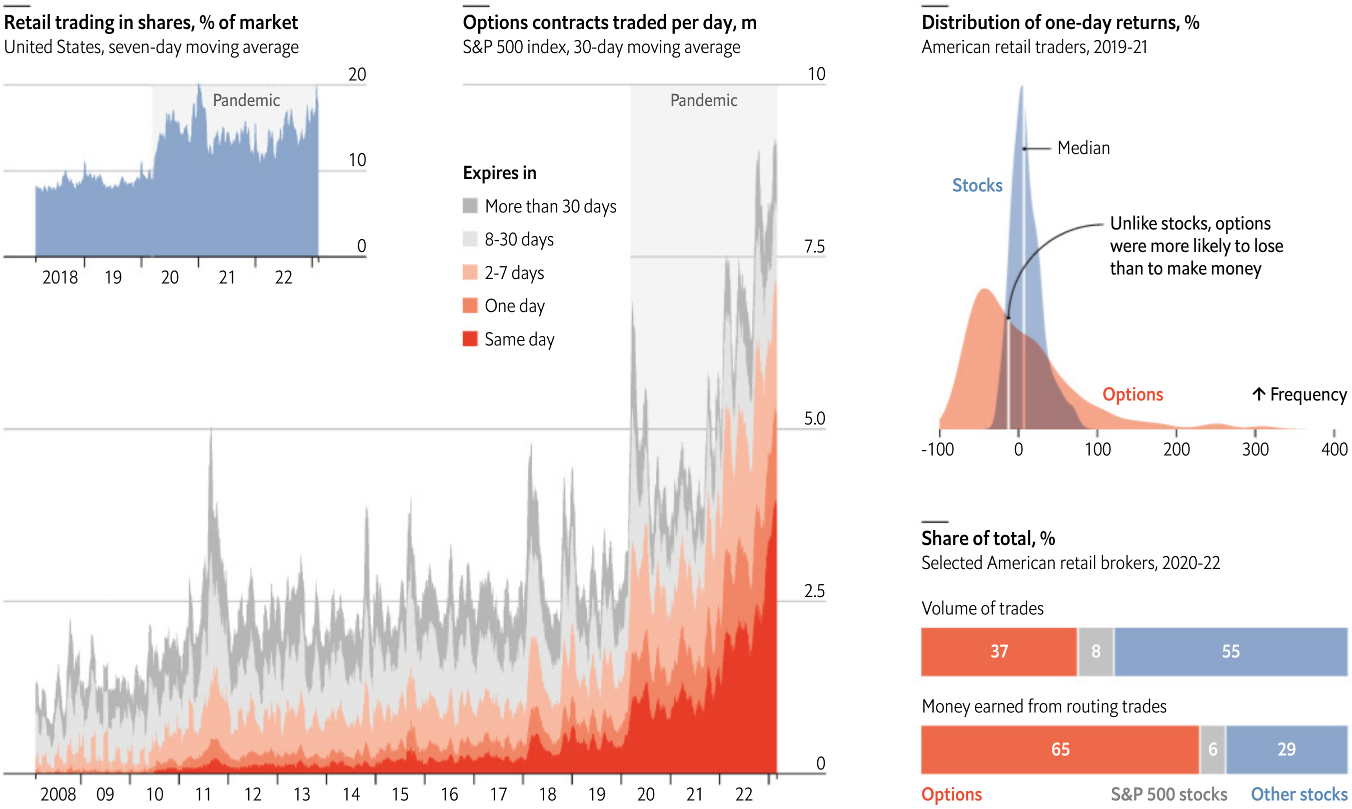
→ **Options trading has surged since 2019, harming retail investors but benefiting brokers**


Retail trading in shares, % of market
United States, seven-day moving average

Options contracts traded per day, m
S&P 500 index, 30-day moving average

Distribution of one-day returns, %
American retail traders, 2019-21

Share of total, %
Selected American retail brokers, 2020-22

Sources: JPMorgan; OptionMetrics; "Payment for order flow and asset choice", by T. Ernst and C. Spatt, working paper, 2022; company reports

No good options

Retail traders are losing billions on stock options

NOT LONG ago trading in American stock options was limited mainly to professional investors. Options are contracts that provide the right to buy or sell a security at a specified price over a fixed time period. They can produce big payouts if a stock moves in the desired direction, and expire worthless otherwise. Sophisticated buyers use options to hedge against risk, generate income or as a form of leverage. However, options can also be used to gamble.

Interest in American options has grown rapidly since the covid-19 pandemic began. In early 2020 the number of options traded per day rose from 20m to 30m. It surged again to 40m in early 2021, when trading erupted in "meme" stocks such as GameStop and enthusiasts flocked to options to magnify their bets. Trading has reached record highs this year. The daily average in February was 45m contracts, and on February 2nd 68m options changed hands.

Overall, the most heavily traded options are puts—bets that a security's price will fall—on market indices, which can be used to limit risk. Most of these contracts are probably held by institutional investors. Retail traders, though, seem to be using options mainly to speculate: in 2020-21 they bought twice as many calls (bets that a price will rise) as puts. And such investors, whose share of overall stock trading in America has doubled since 2019, now account for 48% of trading volume in options, according to a forthcoming paper in the *Journal of Finance* by Svetlana Bryzgalova, Anna Pavlova and Taisiya Sikorskaya of London Business School.

Moreover, rather than trading options that last for weeks, months or years, buyers are now piling into zero-days-to-expiration (ODTE) contracts. These options, which expire the day that they are bought and yield windfalls if a price moves sharply that day, became more widely available in 2022, after exchanges increased the number of trading days on which they are available. As meme-stock mania has faded, ODTE options, mainly written on market-wide indices, have become the new fad. Daily trading of ODTE contracts recently reached a record notional value of $1trn. And according to OptionMetrics, a data provider, these contracts now account for more than half of trading in options on the S&P 500 index, up from a quarter in 2019.

Some market analysts have warned that ODTE options pose a systemic risk. In theory, if the investors selling them do not hold positions in the securities underlying these contracts, an abrupt intraday price change could force them to trade vast quantities of those assets simultaneously.

Even if options do not threaten markets as a whole, they clearly represent a siren song for retail investors. Despite the rise in share prices since early 2020, traders who have treated stockmarkets like a casino have on average fared about as well as a typical slot-machine player. The *Journal of Finance* authors estimate that between November 2019 and June 2021, retail investors collectively lost $2.1bn on options.

The proceeds from these traders' losses accrue both to counterparties (the investors selling the options) and to middlemen. According to a working paper by Thomas Ernst of the University of Maryland and Chester Spatt of Carnegie Mellon, "bid-ask spreads"—the gap between marketmakers' listed buy and sell prices for a given security—are wider for options than for stocks. To collect such juicy spreads, marketmakers pay brokers twice as much for the privilege of executing trades in options as for stock transactions. As a result, in 2022 retail brokers made $2bn from options trading, a small but fast-growing share of their profits. Just like casinos, in options trading, the house always wins. ■

The King of Sting

Justin Schmidt, entomologist, died on February 18th, aged 75

To be stung by a wasp, an ant or a bee raises—beyond the "Ow!"—immediate questions. How can a creature so tiny inflict such remarkable pain? And why, when all you have done is to make a jam sandwich or dare to eat a peach, does it launch such a vicious and unprovoked attack?

Justin Schmidt wondered too, and spent his life trying to find out. Hence his nickname, "The King of Sting". To further human knowledge he thrust his bare arms into hives of honey bees, dug up in Brazil a boiling swarm of bullet ants (which reduced him to a shaking wreck, held together by ice and beer), teetered in trees to cut down hornets' nests, and filled his home-cum-lab west of Tucson with tanks of irritated wasps. He harvested the venom of hundreds of ants to compare it with the venom of other ants, at 200 ants for one-thousandth of a teaspoon. Over 35 years 150 different species of insect jabbed him but, to his regret, his pain threshold never rose. If they would not voluntarily perform (most were eager) he gritted his teeth, placed them on his arm and enticed them, in the name of science. Then, after cursing just a little, he took out his notebook and stopwatch and wrote it up.

Most famously, in 1983, he compiled the Schmidt Index, ranking the stings of 78 insects from one to four according to their pain. Most he had endured himself—felt he had to endure, because of his list—though colleagues chipped in. The honey bee was his anchoring value, since most people knew what a bee sting felt like, and was rated a two. He also provided a line or so, trembling on the edge of poetry, to describe each pain precisely. Thus the sweat bee sting (1), was "light and ephemeral, almost fruity. A tiny spark has singed a single hair on your arm." The honey wasp's (2) was "Spicy, blistering. A cotton swab dipped in habanero sauce has been pushed up your nose." The unstable paper wasp's (2) was "like a dinner guest who stays much too long." As for the red-headed paper wasp's (3), this was "irrationally intense...the closest you will come to seeing the blue of a flame from within the fire."

This sounded like pure masochism, from a man who relished pain and had been stung so often by honey bees that he found it boring. ("Like a burning matchhead that lands on your skin.") The sting of the club-horned wasp (0.5) was actually rated "disappointing". But he strongly denied that he was either a masochist, or crazy. His list was a tool to explore why inflicting pain was more necessary for some insects than others.

Solitary insects, he found, tended to have a much milder sting than those organised into complex colonies. From this he deduced that stings allowed insects to get more food, hence build social structures, hence need to defend the nest, the workers, the immobile larvae and the whole teeming enterprise. The greater the danger, the higher the venom's potency—even, in the case of a colony of paper wasps he was annoying once, blinding him when it was sprayed in microdroplets through the air. All that defending, incidentally, was left to the females; male insects did not sting, but hid, or fled. When he wanted to appal people he would pick up a male of a hyper-stinging species, like his favourite tarantula hawk wasp (pictured), and put on a brave grin.

Most stings were highly effective. Buzzing, bright colours and a hard shell helped; but predators thousands of times larger remembered stings keenly, and kept their distance. Only bears, skunks and honey badgers thought the pain worth the reward. He himself had never forgotten his first encounter with a bumble bee, which stung him on the neck when he was five and running wild in the woods of Appalachian Pennsylvania. That did not put him off, though. He was well adapted for entomology, a small, skinny kid with tiny fingers and a delicate way of picking honey bees off clover flowers. Insects enchanted him, especially flashy yellowjackets and tiger swallowtail butterflies; he fell in a swamp once, filthy and smelly, as he tried to catch a green darner dragonfly. As a teenager, he had his own beehives. In his early 20s, after an unsatisfying flirtation with chemistry (which did not creep and crawl enough), he was on the road in a car crammed with buckets and shovels to dig up and study harvester ants in Georgia. Their stings were curiously lasting. That curiosity shaped his life.

In general, he thought insects got a raw deal. Government research funding went to bigger creatures; no one seemed to care about wasps, or even ants. So although he held a senior post for 25 years at the Carl Hayden Bee Research Centre in Tucson, part of the federal Department of Agriculture, he worked on his own self-funded projects much of the time. They included looking for insects whose stings he might not have experienced yet.

For him, stings were not only interesting chemically and socially. They were also philosophically intriguing. The purpose of pain was to tell the body that damage was occurring, or about to occur. Many stings on his list, including those of the tarantula hawk, packed a punch but did no harm beyond a prick and a welt. By contrast, others, including the sting of the honey bee, seemed milder but were much more toxic; they could close down the body and, if delivered en masse, stop the heart. Stings seemed to be a sharp statement of truth, insect to human. But pain was often a lie. Only toxicity counted. It was all part of an awkward web of miscommunication and non-understanding which he hoped to unravel, given patience and time.

Meanwhile he had installed himself in south-eastern Arizona, on the edge of the Sonoran desert. He had already found Maricopa harvester ants there, the most savage variety. ("After eight unrelenting hours of drilling into that ingrown toenail, you find the drill is wedged in the toe.") For the worst stingers, though, he would have to go farther south, as he often had, to the tropical and semi-tropical Americas. There he would encounter again the bullet ant (4+) with its "pure, intense, brilliant pain. Like walking over flaming charcoal with a three-inch nail in your heel." Or, possibly, another 4, the warrior wasp: "Torture. You are chained in the flow of an active volcano. Why did I start this list?" ■

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